THE HEALTH EDUCATION JOURNAL

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Editorial

Miss Dickson's account of her survey of health knowledge in Bradford secondary schools (page 22) is encouraging, but it is also a warning that there are many gaps in our health education system. Her findings indicate that learning by repetition and even by subliminal stimulus takes place to a greater extent than is realised. The high proportion of children who knew the meaning of words like " bacteria " and " laxative " is contrasted with the serious lack of knowledge of first aid. We see that the view of educationists that learning by rote is inferior to learning by insight is more than justified.

The highest proportion of correct answers was concerned with decayed teeth (80%), infection (65%), with " bacteria ", " laxative " and " constipation " falling fairly close together in the third place, (46-492). But 97% of boys in the classes to which the question was put did not know the meaning of " menstruation ", and even among the girls 25% did not know and 6% gave incorrect answers. Miss Dickson offers an explanation for such anomalies by mentioning that many of the words used in the test have been introduced into everyday conversation by commercial advertising on television. On the other hand, a perfectly respectable adult source of suggestion has resulted in 92% of children understanding the function of the brain. Again, the fact that the choice of foodstuffs would ensure that bodily requirements were satisfied reflects the efforts of the commercial advertisers of food, although the school meals service must undoubtedly take some credit. On balance Miss Dickson's finding confirms the views of those who are critical of commercial advertising. It encourages learning by rote without insight, and there is a bias towards remedies for the relief of symptoms, resulting in an unbalanced and imperfect impression which does not offer the individual the personal skills which he can use to promote health or to help others in trouble.

The B.M.A. memorandum of evidence submitted to the Pilkington Committee made the comment that television advertising of proprietary remedies was contrary to the public interest and wholly undesirable in that it encouraged self-medication. This is not to say that advertising of itself is bad. Such an extreme view ignores the plausible plea of the industry that advertising has contributed to the high standard of living. Where advertisements

encourage the public to eat first class protein, fresh fruit and vegetables, and to keep its person and clothing clean, there can be no reasonable objection, but rather praise. But advertisements which may unconsciously create the symptoms for which a remedy is offered not only encourage self-medication but also prevent a proper understanding of normal physiology, which is an important basis of health education. Would it be too extravagant to say that if the whole community possessed the biological common sense which is derived from a working knowledge of normal human physiology, then the claims of many advertisers would appear to them to be ridiculous ?

HEALTH EDUCATION NEWS

Mr. Henry Harris, Health Education Clerk, Salop County Council, reports some promising developments during 1960 :—

School Health Month

At Wellington Princes Street Junior School an exhibit of posters, leaflets and models was set up each preceding week as prelude to four Friday afternoon talks and film shows presented successively by a medical officer, a dental officer, a nursing officer and an administrative officer. Their subjects were Smoking and Lung Cancer ; Care and Preservation of Teeth ; Diet and Nutrition ; Home Safety. Great interest was aroused, and a return engagement is projected.

Dental Health Exhibit

Collaborating with the British Dental Association Branch, the Health Department staged a one-day exhibit at the Oswestry Agricultural Show. The theme *Choice is Yours—Neglect or Care* was illustrated by quiz and flashing panels, models, posters and paper sculpture, and a mobile dental clinic was shown.

" *Better Health* "

A more comprehensive distribution was inaugurated, and copies of the magazine now go to Members of the Health Committee, doctors, dentists, and to schools with pupils of seven years and over.

CATCH THEM BEFORE THEY START

A report on an attempt to influence children's smoking habits

By MARGOT JEFFERYS, London School of Hygiene and Tropical Medicine, and W. R. WESTAWAY, Hampden School, South Oxhey, Herts.

THERE is widespread pessimism about our ability to effect any radical modification in the smoking habits of the adult population. Yet, in the absence of measures taken to render tobacco smoke innocuous, the most effective way of reducing the incidence of several types of lung disease, including lung cancer, is to secure a substantial reduction in the quantity of tobacco smoked.

In these circumstances, efforts are being made to dissuade those on the threshold of adult life from indulging in an activity to which many will later become addicted.

Surveys undertaken in schools of different kinds in various parts of the country all indicate that smoking is common today among boys of thirteen and over, and rather less common among girls. Age for age, secondary modern school boys are more likely to be smoking than grammar school boys. Smoking among children is more common in the South of England than in Edinburgh, possibly because the former are better off. It appears that the majority of teenage children know about the association of cigarette smoking with lung cancer, although, as in the case of adults and even doctors, smokers deny a causal relationship between the two phenomena more frequently than do non-smokers. (Cartwright, Martin and Thomson, 1959).

Recent annual reports of Medical Officers of Health for Counties and County Boroughs indicate that, in many areas, attempts are

now being made to dissuade teenage boys and girls from smoking. It is fair to assume that most of these attempts have been undertaken without a parallel effort to measure their results.

This paper describes an attempt to evaluate the effectiveness of an anti-smoking campaign in a secondary modern school in South West Hertfordshire. Judged in terms of its influence on children's current smoking habits, the campaign was not very effective. There were, however, weaknesses in the programme and the material used which may have accounted for its comparative ineffectiveness. Certainly, the findings do not provide conclusive evidence of the necessary failure of all programmes with a similar aim. On the contrary, they suggest that a well-considered programme of talks, supported by good visual aids including films, might have a substantial influence on school children.

THE EDUCATIONAL PROGRAMME

The educational programme was carried out intermittently during the school year 1959-60 amongst six classes of third form pupils. At the start of the year the average age of the pupils was 13 years 9 months. The programme consisted of :—

(1) A display of Central Council for Health Education posters.

(2) Talks to each class by the headmaster during November 1959 on the dangers of contracting lung cancer.

(3) Talks during May 1960 from either the Education Officer or the Deputy Medical Director of the Central Council for Health Education.

(4) The showing of a film entitled *One in 20,000* made by an American total abstainers organisation. Its purpose was to discourage excessive smoking by showing, amongst other things, a major operation—the removal of a cancerous lung from a patient who was a chain smoker. The film, in colour, had a strongly moralistic flavour and by implication seemed to suggest that the man's life had been saved by the miracle of modern surgery and that his survival was assured if he gave up smoking.

When shown first the film was stopped just before the first incision of the operation. Subsequently, the whole film was shown, children being given the option of not seeing it. In fact only two children (or less than 2% of those in attendance that day) chose not to see it. The film was

shown once again in the evening when twenty parents came, together with a few children who had already seen it, and about twelve younger children who had not. These latter complete showings took place in March 1960.

(5) The showing, in May 1960, of a film prepared for B.B.C. television in 1957, and called *Facts and Figures on Smoking and Lung Cancer*. Only half the children in the relevant age group saw it. Using films of research in progress, and charts and diagrams illustrating the associations, it showed the known facts about the relationship between smoking and lung cancer.

It should be emphasised that the educational programme was recognised by all concerned to be deficient in both the quantity and quality of the items produced. There was a lack of suitable films, posters and other visual aids, and there was little time to prepare an extensive and well-planned series of talks and discussions.

METHOD OF EVALUATION

In order to attribute changes in smoking habits or in attitudes towards smoking to the school programme and not to other extraneous factors, the habits and attitudes of children who were subjected to the programme were compared to those of a similar group of children whose habits before the campaign were comparable, and who during the campaign were subjected to roughly the same external pressures. This control group consisted of the third year pupils of a comparable non-selective, secondary school serving the same housing estate.

Before the campaign started, children in both schools were asked to fill in questionnaires about their smoking habits. The forms, marked "confidential", were distributed and collected up by a member of the staff of the London School of Hygiene and Tropical Medicine, and every effort was made to assure the children that neither their teachers nor their parents would see their replies. At the end of the school year the children were again asked to complete a questionnaire. The only departure from the previous procedure was that pupils in the "campaign" school were invited to say what they remembered of the films and talks, what they felt about them and whether they thought that younger children should have seen or heard them.[1]

[1]A detailed report of the methods used in the enquiry can be obtained from the authors.

RESULTS

(a) Smoking Habits

Smokers were defined as those who had smoked one or more cigarettes per week during the four weeks prior to the enquiry. Before the campaign started, roughly comparable proportions of boys and girls in the two schools were smoking. After the campaign rather larger proportions of boys and girls in both schools were smoking regularly. Not all the children who filled in forms before the campaign did so after it and vice versa. When the smoking habits of those who completed forms on both occasions only were analysed, there was no statistically significant difference (χ^2 test) between the two schools either before or after the campaign. (Table I). When quantity smoked was also taken into account it seemed that the boys who had been subjected to the campaign had deteriorated rather less than the control boys. (Table II). This finding was not significant, however, at the 5% level.

(b) Expectations about smoking in the future

Pupils were asked on both occasions whether they expected to smoke regularly, occasionally, or never, when they left school, and their intentions were said to have worsened if on the second occasion they gave the response regularly rather than occasionally, or occasionally rather than never. Intentions were held to have improved if the change between the two dates was in the other direction. When responses at the two dates were compared in this way it was found that, while the boys at the campaign school were rather more likely to change their intentions for the better than for the worse, the opposite was true of the boys at the control school. On the other hand, many more of the campaign school than of the control school girls changed their intentions for the worse between the two dates. (Table III). Protestations of future intentions are notoriously unreliable and this indication of the future intentions of the children must be treated with caution. It is possible to argue, however, that expressed intentions for the future reflect current attitudes to smoking. If we postulate, therefore, that the campaign had a positive influence on the boys we must also conclude that the influence on the girls was negative.

The difference between the response of boys and girls to the campaign was also apparent in attitudes to smoking. For example, the campaign school boys after the campaign were more likely than the control school boys to admit that smoking was a waste of money.

Among the girls, however, this was not so. Why the girls should have reacted differently from the boys is difficult to explain, and is discussed later in the paper.

(c) Children's assessments of the effect of the film *One in 20,000.*

Pupils at the "campaign" school were asked to indicate which one of five statements represented their own standpoint after seeing the film.

These were—

A. "I hadn't made up my mind whether I would smoke or not until I saw the film. Now I've decided *not* to start smoking."

B. "I used to smoke but since I saw the film I've decided to stop."

C. "I smoke cigarettes now and I expect to go on doing so."

D. "I never meant to start smoking and I still don't intend to."

E. "I don't smoke cigarettes now, but I don't know whether I will start or not."

Amongst both the boys and the girls between 25 and 30 per cent gave either A or B as an answer, implying thereby that the film had persuaded them not to smoke. About the same proportion of boys and rather fewer girls gave C as their response, denying, in other words, that the film had persuaded them to modify their present practice or future expectations. These percentages cannot be directly compared with those used previously to indicate the proportions who had changed their smoking habits, because some children, whom we did not regard as smokers because they smoked less than one a week, thought of themselves as smokers. (Table IV).

In addition, pupils described in their own words what they thought of the film, and according to their response were grouped into :—

A. Those who asserted that the film would have a positive influence in general.

B. Those who considered that it might influence some but not others.

C. Those who thought that it would not be influential at all.

D. Those who did not give an opinion on its effectiveness (Table V).

The proportion who considered that the film was likely to have a positive influence on people in general was considerably higher than the proportion who admitted to being influenced by it themselves.

One of the more intelligent girls described her positive reaction to the film's message in these words—" I think the film we saw has made most boys and girls give up smoking. After I had seen the film I went home and tried to stop my mum and dad smoking." A middle stream boy wrote as follows : " It was good and it should be shown in the cinema. It made me stop smoking although I did hardly begin. It shocked me terably because of the amount of people with lung cancer." A middle stream girl felt that " it was a great thing to the person who had the Op, because the Op saved his life and by showing the film to children of 14—15 it most likely will stop them smoking and save there lives." More spectacularly a young middle stream smoker, who volunteered that he had been smoking since the age of 11, said " having seen it I reduced my cigarette consumption by at least 40 a week to a mere 10—15. I used to smoke at least 50 a week." Another wrote " if that film didn't turn the heads of some children I don't know what will !" And a bottom stream boy with spelling problems was expressing the same point of view when he said " If whem many of the Aulds (adults) saw it they must have secon forts on somking."

Among those who thought that the film was not likely to be at all effective was a boy who gave as a reason " this film shows that this terrible disease can be cured which will make people think that by having this operation they can be cured." A girl felt it was ineffective because " it gave no definite proof that smoking is the cause of lung cancer." Another boy commented pessimistically " I do not think this film will stop people smoking, although you see the bad lung being removed and the film was full of blood." His comment was capped by a classmate who stated " If I was a smoking, I don't think I would stop after seeing the film because after the American had had his operation he was pysically fit." A top stream girl alleged " it did not turn me off smoking as I don't think I will catch lung cancer because I do not smoke more than 10 cigarettes a day."

Among those who felt that the film might have a limited effect only, was a boy who thought " it would have been better if he died " (i.e. the man operated upon). Another boy confessed " It put me off smoking for a bit, but not for long. The operation was a bit morbid but I liked it." He was not the only one to record that the effect was limited in time. A boy who saw the film twice (the second time with his parents) said, " When I first saw it I thought how terrible having cancer and then having an operation, but when I saw it the second time it did not seem so bad." A girl

put the possible effects side by side, " The cutting open might put some people off but they might think if we die, we die. You die anyway sometime."

A quarter of the girls admitted to having felt faint, sick or terrified during the film, and over half thought that it should not be shown to younger children because it would have a similar effect upon them. A fairly typical comment was that of a girl who said " Well it turned my stomach over and I think younger people might be more afraid. It might give them nightmares." This girl added that it should not be shown to school children but could be shown on television, " so that you could see it if you wanted to or turn it off if you didnt ".

The boys less frequently admitted fear or nausea, and only one in three thought that it should not be shown to younger children. When such an opinion was expressed, however, the reason most frequently given, as in the case of the girls, was the fear it would cause. In the words of one boy " I think it should not be shown to younger children as it made (me) shudder and the colour made it even worse."

Two out of three boys and rather under half the girls thought that the film should be shown to younger children, and some of them believed that it would be more effective then than among older children. As one boy put it : " Although some of them would faint or have nightmares I think it better that they should see it, rather than smoke and die of lung cancer." A bottom stream boy who smokes over 40 cigarettes a week thought " it was a good film. It made me feel sick but I cannot stop smoking." He went on to state that it should be shown to younger children because " I wish I had seen it when I was in my over school " meaning, presumably, his primary school.

On the other hand, one or two felt that it was useless showing it to younger children because " they had not yet had the temptation to smoke." One cogent argument against showing it to younger children was put by a top stream girl. " I do not think ", she wrote, " it should be shown to them till they are older as they will be scared for there parents thinking they will get cancer if they smoke." " It might frighten them if they have to have another operation for something else " was another apposite point of view expressed by a top stream boy. Another boy put a similar point even more forcefully. " It is to horrible in parts to watch. It would certainly make younger children think but is it worth it ? A lot of people who have seen it might have qualms of going into

hospitable for even a very minor operation."

Most children when describing how they felt about the film gave some indication of how effective they thought it was likely to be ; but some described impressions which the film had left which seem to have little relevance to its main purpose. For example, one boy wrote, " The part that struck me was the size of the hole ", and a girl wrote " It struck me that the operation in the film seemed dangerous because the man didn't seem ill." Another girl wrote, " The gentleman was truely a good actor and took his part in such a way that it looked real. The operation was very blood thirsty and sickly."

One factor which was incalculable was the reaction of parents. The headmaster had informed all parents that films on smoking would be shown during the school year, and, at a later date, invited them to attend a special evening showing of *One in 20,000*.

Parental response to these announcements was not overwhelming. Only twenty parents came to see the film and no parent made a special point of discussing the programme with the headmaster. Those parents who discussed it incidentally approved the programme fully and enthusiastically. There was a complete absence of parental disapproval.

(d) Children's assessments of the talk by the representatives of the Central Council for Health Education.

Pupils were asked whether they had heard one of the doctors talk and if so, " What is the main thing you remember about his talk ? " An analysis of the replies suggested that the largest single proportion of boys (34%) and of girls (23%) recalled information given them on the incidence of lung cancer and/or deaths from it. There was, however, a considerable variety of opinion among those who gave a figure for death rates. Some thought that one in eight men died of lung cancer, and one boy even put it as high as one in three, one in eight being the figure he reserved for women. Others correctly gave a figure of 20,000 deaths a year ; but still others thought it was 200,000.

The high cost of smoking was a point which impressed nearly as many girls (22%) and rather fewer boys (14%). One girl remembered that the average person spent £71 a year on cigarettes. A middle stream boy recalled that " He (the doctor) worked out the cost and gave the odds of staying alive after having the dangerous operation."

More boys (14%) than girls (3%) remembered what the doctors

had said about the nature of a cancerous growth. " He told us about how lung cancer is started and how it spreads into other cells and into the other lung," wrote one boy. A girl put it this way, " If you keep smoking one of your cells goes gready and takes all of the others and that's cancer."

A number of both boys (9%) and girls (10%) noted that the doctor who spoke to them smoked himself. A top stream girl said " He talked about ' Players Please ' and he asked us if we thought they did please. But he also said that he thought they did please because he smoked." A bottom stream girl had a shorter sentence. " He whish that he have stop smoking years ago." Another girl recalled that the doctor had talked about " what cigarettes do for you, e.g. steady nerves, satisfy."

There was relatively frequent comment, too, on the form the talks took, and on the way the doctors developed their arguments. One girl, for example, wrote " I remember that he asked eight boys to stand up and said one of them would die." A boy noted that " the doctor told us about smoking and cancer but did not impress it upon us." Another girl recalled " the way in which he conveyed his question to the class. They were easy to understand and reached the target they were meant to." For this reason she advocated his talk being given to younger children. " It can't do any harm and in fact it may do a lot of good."

The overwhelming majority of children thought that the doctors' talks, unlike the American film, should be given to younger children. Indeed, the girls were unanimous on this point, the few dissidents coming from amongst the boys (14%). One of the latter wrote " Really, I don't think they would have understood him very much and probably would have forgotten every word of his talk within a week." Another was more disparaging in his comments. Of the doctor's talk, he recalled that " He was honest about it, he smokes a pipe." But he did not think younger children should hear it. His reason was " not particularly because they'll think he's a bloke who don't know what he's talking about. So as a dare they smoke and never stop." Another boy, a non-smoker, was in favour of younger children hearing the doctor but sceptical of the effect. " If I had the habit of smoking it would take more than a doctor to stop me."

Most of the reasons given for thinking that the doctor's talk should be given to younger children were variants of the themes " to discourage them from smoking " and " to make them aware of the facts. " Some pupils felt that a doctor would be more effective

than a film ; but in at least one other response the opposite point was made—" . . . . but films of operations discourages them more ". Two or three thought that younger children were more educable : " They would listen more than older boys who think they know everything and don't like to be told what to do." On the other hand, another stressed that it was suitable for all ages " including our parents ". Parents were mentioned by several girls in this context. As one girl put it " they (younger children) might tell their parents about the talk and it might help stop them smoking." The last Cassandra-like comment is reserved for a boy who gloomily forecast " that when they get to my age far more will be smoking than now if the habit is not checked."

(e) Points remembered from the B.B.C. television film *Facts and Figures about Smoking and Lung Cancer.*

The most striking feature of the response to a question on the B.B.C. film was the large proportion (36% of the boys and 24% of the girls) who, although they had seen the film, did not record anything or stated that they could not remember anything. The contrast with the proportions making no comment about the film *One in 20,000* (10% of the boys and no girls) and on the doctors' talks (8% of boys and 8% of the girls) is marked. It is possible, however, that fatigue played some part in the difference in response, since the question concerning the B.B.C. film was the last to be put. On the other hand, the B.B.C. film was shown only three weeks before the children's comments were obtained, whereas the American film was shown thirteen weeks previously. It would seem that the declared but limited aim of the B.B.C. to put the facts objectively had a limited result. It hardly succeeded in arousing interest. Equally striking were the inaccuracies of those who attempted to recall actual numbers or rates. Those who relied on broad comparisons of comparative importance, such as " more " or " less ", or on an outline of trends, were on much safer ground.

DISCUSSION

It will be recalled that the experiment described had two related immediate aims : to dissuade the non-smokers from starting and to persuade the smokers to stop altogether or reduce the quantity smoked.

It is probably realistic to argue that the maximum effect of such

a campaign is likely to be achieved during or immediately following it. With the passage of time the urgency of the message is likely to recede and the counter-considerations grow in attractiveness, especially if the individuals concerned are subjected to the constant suggestions of the advertisers of cigarettes and their own friends.

Our findings, therefore, of the way in which the smoking habits of school children had changed immediately after a campaign intended to influence them are not altogether encouraging ones. There is some evidence to suggest that an appreciable number of the boys had been positively influenced by the campaign ; but the effect of the campaign on some of the girls seems to have been to persuade them that, if there are risks involved in smoking, they are worth taking.

For a number of reasons, however, the absence of spectacular results should not be taken to imply that the campaign was a failure and the energy expended wasted. In the first place, those involved in planning and executing the programme were faced with a comparative dearth of attractive, alternative methods of presenting the facts. The American film was not regarded as particularly suitable for an audience of English school children ; it was used merely because little else was available at the time. Similarly, the B.B.C. film with its emphasis on the objective, statistical presentation of facts was not likely to arouse teenage interest. The posters also were unlikely to appeal to an audience of secondary modern school boys and girls. The strip cartoons, for instance, would have been more appropriate for public or preparatory school boys, since they used terms like " Mummy " and " Daddy " which are foreign to most working class boys. In short, it is perhaps surprising that, with such poverty of material, any results were achieved. If there had been more high quality films, film strips, posters and other visual aids available and more time to plan imaginative discussions and activities, the results might well have been more positive.

In the second place, while the measurable results were small, the children's reactions to the American film and the talks from the Central Council for Health Education officers suggest that many of them had been deeply impressed by what they had seen or been told. We were cautious in describing children as smokers ; we therefore tended to under- rather than over-estimate the extent to which smoking had been reduced by those who saw the film.

Thirdly, although over a third of the boys and about one in six of the girls were smoking regularly after the campaign, there is a not unreasonable hope that the programme may have strengthened

the resolve of the non-smokers to abstain after they leave school. Certainly, the responses indicate that this may occur. Only a follow-up study in several years time can ascertain whether this longer term objective has been achieved.

It is intriguing, if baffling, to speculate on the reasons why the response of some of the girls to the campaign seemed to be negative rather than neutral. The most plausible explanation would seem to be that the emphasis put by both films and speakers on the greater risk of men contracting lung cancer may paradoxically have encouraged the girls to believe that their own chances of doing so were negligible. It may also be more difficult for girls, who were still smoking much less heavily than the boys, to believe that they themselves could become heavy and addicted smokers : some of the boys had already acknowledged their proximity to addiction and therefore had some inkling of the problem which would be involved in giving up smoking once they had become habitual smokers. A more tortuous explanation of the reaction of the girls would be that fear, operating at the sub-conscious level, had prevented them from accepting the message of the film. An alternative explanation is that the girls involved have boy friends much older than themselves who give them cigarettes and teach them to be essentially sceptical about the sermons and practices of the adult world.

Not the least valuable result of the enquiry has been to underline the difficulties which are involved in attempting to influence the behaviour of individuals. The cold, unadorned presentation of facts is seldom sufficient to persuade adults, let alone children, to act upon them, especially when the hypothetical benefits to be derived are not to be earned until a dim, inconceivable future. Moreover, parents and children alike are being continually subjected to an intensive advertising campaign designed to persuade them of the present satisfactions to be derived from smoking. Particular emphasis is put upon the association of smoking with desirable pursuits such as love-making, sun-bathing, travel, sport and dancing. It would undoubtedly make the task of the health educator easier if a ban were imposed here, as it is in Norway, on the advertising of cigarettes and tobacco.

The health educator can, however, learn much from the advertiser, if he is really anxious that his message should be heard, understood and acted upon. The children's written and verbal responses to questions concerning the films and talks indicated clearly that they have great difficulty in remembering and reproducing

accurately the absolute figures with which they have been supplied. They remember the human dramas and evince interest in the speaker as a person as well as in his message. Any campaign designed for either adults or children would do well to remember this.

Finally, the attempt to discover how the children reacted to the films and talks served to show how much we need to be aware of the possibility of unforeseen side effects. The film *One in 20,000* aroused a good deal of fear especially, but not exclusively, among the girls. We had expected that many children would be fearful for themselves ; we had not foreseen that for some at least the fear expressed was for the lives of their parents, of loved ones. Nor had we foreseen the more general anxieties concerning possible hospital treatment which the film aroused in at least one or two articulate children. In any educational programme concerning disease and the steps needed to avoid it, there is always a danger of upsetting a sensitive or vulnerable child or adult. Excessive caution or concern can be stultifying, and cannot be used as an excuse for refusing to educate ; but those who plan health education programmes should try to anticipate all the fears and anxieties which they may rouse in the minds of the audience. For this reason alone, films or visual aids of other kinds should only be used, as they were in this campaign, when a responsible individual is also available to allay morbid anxieties.

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TABLES

I. Percentage of boys and girls in "campaign" and "control" school who were smokers and non-smokers in October 1959 and June 1960.

	Boys		Girls	
	Campaign	Control	Campaign	Control
	%	%	%	%
Not smoking Oct., not smoking June	57	55	82	82
Not smoking Oct., smoking June	11	15	13	8
Smoking Oct., not smoking June	9	7	—	5
Smoking Oct., smoking June ...	23	24	5	5
Total ...	100	100	100	100
Nos. in group = 100% ...	81	55	55	65

II. Percentage of boys at each school who changed their smoking habits between October 1959 and June 1960.

Change in habit	Campaign	Control
	%	%
1. None, i.e. not smoking at both dates or smoking same quantities	74	69
2. For the worse : smoking more	16	24
3. For the better : stopped or smoking less ...	10	7
All	100	100
Total Numbers = 100% ...	81	55

III. **Percentage of boys and girls in each school who changed their expectations concerning future smoking habits between October 1959 and June 1960.**

Change in expressed intention	Boys		Girls	
	Campaign	Control	Campaign	Control
	%	%	%	%
None	54	57	43	62
For the worse	19	25	45	23
For the better	27	18	12	15
All	100	100	100	100
Total Number=100%	82	55	65	65

IV. **Percentage of boys and girls stating their attitudes after having seen the film "One in 20,000" at the "campaign" school: (A) have decided not to start smoking (B) have decided to stop (C) expect to continue (D) never meant to start (E) still undecided.**

Statements about the effect of the film	'A'	'B'	'C'	'D'	'E'	Not recorded	All
Boys (79) (percentage)	10	19	29	19	15	8	100
Girls (64) ,,	6	20	19	28	22	5	100

V. **Percentage of boys and girls who thought that the film would have (A) positive, (B) mixed, (C) negative effects and (D) did not express an opinion on its effectiveness.**

	'A'	'B'	'C'	'D'	All
Boys (percentage)	39	13	14	24	100
Girls ,, ...	47	14	9	30	100

SWEATING AND ANTI-PERSPIRANTS

By JEAN HARRISON, M.B., B.S., Royal Free Hospital School of Medicine

The sweat glands

THE sweat glands of the human skin are of two distinct types. The eccrine sweat glands are distributed over the entire body surface and are calculated to number some two to three million ; they are particularly numerous in the skin of the palm, sole and axilla. Each gland consists of a coiled tubule lined with secretory cells and a directly continuous duct which passes spirally through the epidermis to open on the surface. Their function is of major importance in the regulation of body temperature, heat loss from the body being brought about by the cooling effect of evaporation of sweat from the skin surface. The secretion of sweat is regulated by the sympathetic nervous system, and in most regions of the body usually occurs only in response to thermal stimuli, although a violent emotional stimulus may provoke generalised sweating. In contradistinction to the eccrine glands of the general body surface those of the palm and sole are activated only by emotional stimuli, whilst the eccrine glands of the axilla respond to both thermal and emotional stimuli. It appears likely that a continuous secretion of sweat takes place in the axilla, although the output varies considerably between individuals (Kuno, 1934).

The apocrine sweat glands develop from the epithelium of the hair follicles and in the human skin are found only in certain well-defined areas, namely in the axilla, the ano-genital region, the mammary areola and occasionally in hairy skin of the abdomen and chest. The ceruminous glands of the ear canal are specialised

apocrine glands. The apocrine gland like the eccrine gland is a simple coiled tubule from which the duct proceeds and empties into the hair follicle just beneath the skin surface ; however, it measures about 1 mm in diameter, whilst the eccrine gland is only one-tenth this size, and the secretory layer of cells is enveloped in a thin muscular layer whose contraction expels apocrine sweat from the gland. The physiological importance of the apocrine glands is probably negligible, and they are generally considered to be mere vestigial " scent glands ". Apocrine sweating is controlled by the sympathetic nervous system and takes place only in response to emotional stresses, notably those of fear and pain, but probably also those evoked by sexual and other forms of emotional stimuli. Once the apocrine gland is emptied no further response can occur until the coil has become refilled with secretion, a process which takes from one to three days. An interesting observation was made by Shelley and Hurley (1960) who found that apocrine sweat can be expressed manually from the glands, and they suggest that the friction of tight clothing may also promote expression of sweat.

The sweat

Eccrine sweat is a clear watery fluid containing sodium chloride, other mineral salts and nitrogenous products in dilute solution. Apocrine sweat is a turbid, viscous fluid containing small amounts of protein and other organic substances ; if not diluted or washed away by sweat from nearby eccrine glands it dries to form a gluey scale at the opening of the hair follicle.

The relationship between sweating and the production of " body odour " has been investigated in a series of careful studies by Shelley, Hurley and Nichols (1953).

Pure eccrine sweat from cleansed skin is sterile and remains odourless after incubation at body temperature for four days, whereas sweat from unwashed skin has a distinct stale smell within 48 hours.

If pure apocrine sweat remains sterile it is also odourless even after fourteen days, but if collected from the unwashed axilla it gives rise to the pungent smell of axillary " body odour " within 6 hours. This is due to the action upon apocrine sweat of bacteria resident on the skin. Numerous different micro-organisms may make up the axillary flora and all are capable of producing axillary odour (Strauss and Kligman, 1956). Similarly, apocrine sweat from other skin areas develops an odour in each case characteristic of the site and of its resident bacterial flora.

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Bacterial decomposition of other organic matter on the skin surface may also produce some odour. Shelley and his colleagues found that the presence of hair, to which apocrine sweat, skin debris and bacteria cling, markedly increases the axillary odour. They also believe that the damp milieu provided by eccrine sweat may not only encourage bacterial growth but also help the volatilisation of the odorous products of decomposition of apocrine sweat.

The nature of these products is not completely known, but Nitta and Ikai (1953) have identified among them various substances including caproic, caprylic and butyric acids.

It is obvious that the axilla, where both types of sweat gland are very numerous, where eccrine sweating is activated by heat and by emotion and where clothing impedes evaporation of sweat and may possibly stimulate apocrine sweating by friction, is the most important source of body odour. However, there is considerable racial variation and variation between individuals of the same race in the quantity of sweat put out by both types of gland, with consequent variation in the strength and quality of the odour produced. Furthermore, there is no objective standard by which odour may be assessed, and the offensiveness or otherwise of any scent depends upon the reaction of the individual percipient.

Deodorants and antiperspirants

Measures to control axillary odour may be designed to prevent decomposition of the sweat or to prevent sweating.

Regular shaving of the axillary hair and frequent washing to remove accumulated apocrine sweat are particularly helpful in achieving this former aim. Commercial deodorant products most commonly contain hexachlorophene, which is an antibacterial agent, in a variety of bases and often with an added perfume. Their use on the axillary skin appears to be harmless and effective for those individuals whose eccrine sweating is slight.

Commercial antiperspirant preparations are widely used, especially by those whose more copious eccrine sweating is sufficient to soil the clothing. Almost all these preparations contain aluminium salts, usually aluminium chloride, and many also contain hexachlorophene. Microscopic examination of skin removed from volunteers has shown that aluminium salts cause a mild chemical inflammation of the outer layers of the skin which results in occlusion of the eccrine sweat ducts (Sulzberger, Zak and Herrmann, 1949 ; Shelley and Horvath, 1950). The effect of these

salts on the apocrine glands is the subject of controversy, some authorities believing that they cause degeneration of the secretory cells and others claiming that no such effect can be demonstrated. There is no doubt that like many metallic salts they have a bactericidal effect.

Any harmful result of the use of antiperspirants would seem to depend on the balance between two factors : the amount of sweat secreted by the glands and the degree of occlusion of their ducts. If the ducts are firmly occluded by relatively intense chemical inflammation and at the same time sweat secretion is provoked by intense thermal or emotional stimuli, then sweat can break through the walls of the ducts and seep into the surrounding tissues giving rise to the irritant skin rash known as miliaria or, more familiarly, as prickly heat. The concentration of aluminium salts differs widely in different commercial products, and whereas those with the higher content are in general the more effective antiperspirants these are the more likely to provoke skin rashes. These reactions are not common despite the widespread regular use of antiperspirants, and probably only occur if strong preparations are used when hot weather or exercise stimulate profuse sweating.

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H. E. J. INDEX 1960

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HEALTH EDUCATION IN SECONDARY SCHOOLS

Report on a Questionnaire

By M. K. DICKSON, Lecturer in Health Education,
Margaret McMillan Training College.

THIS small survey was undertaken during October, 1960, when the author was Health Education Officer in Bradford. It was devised to help all those concerned with health education in the schools—teachers, health visitors, medical officers, school nurses—who might be glad to have some indication of the extent of children's knowledge of, and interest in, health subjects. The sample questioned were 14—15 year olds in secondary modern schools. The total number was 304, consisting of 105 boys and 199 girls.

Aims of the questionnaire were to find : the extent of the children's present knowledge on health matters ; some of their health habits ; their interest (if any) in this subject. It was hoped that it would also help in drawing up future health education programmes, especially concerning the place of the health visitor and school nurse in those programmes.

Knowledge on health matters

The first part of the questionnaire attempted to assess the present level of knowledge, and the first question was a simple test of knowledge of body functions. It was perhaps a pity that, in the interests of simplicity and brevity, a question on the site of the various organs was omitted. A diagram to label and fill in would possibly have produced some interesting results.

In marking this question it was decided to count as correct any replies which gave an accurate idea of one or other of the functions of the various organs. Thus, for the function of the heart " pumps

blood " was correct, but just the word " beats " was insufficient and therefore incorrect ; for function of the stomach " digests " or " digests food " was correct, the single word " food " insufficient and therefore incorrect.

It appeared that the functions of the lungs, brain and stomach were well understood : lungs 92%, brain 90%, stomach 85% correct. Not for nothing are children told to " use your brain " and to " think "—this was the most frequent answer for the function of the brain. Wrong answers for function of heart (31%) mostly consisted of the word " beats ", which was not accepted.

Least well understood were liver (15% correct, 75% don't know) ; kidney (23% correct, 67% don't know) ; intestine (27% correct, 56% don't know). Wrong answers for function of intestine (17%) included " to take blood to the stomach " and " to have a baby ".

The proportions of correct, incorrect, and " don't know " answers were very similar for boys and girls.

The second question was a long list of words, chosen because many of them are creeping into everyday language, via advertising and commercial television. Many of these words are commonly used by medically trained staff. It was a hard list for 14—15 year olds, and some of the answers were obvious guesses.

(girls only)

aperient	2%	correct	laxative	49%	correct
tranquilliser	9%	„	constipation	46%	„
abrasion	13%	„	antiseptic	33%	„
decayed tooth	80%	„	sedative	37%	„
infection	65%	„	tonic	33%	„
bacteria	49%	„	virus	20%	„

The highest proportion (42%) of wrong answers concerned the word " tonic " : for example, " to bring you round ", " to give you a formula ". Counted as correct were " drink of beer " and " hair tonic ". " Laxative " produced 21% wrong answers, mostly through confusion with " relax ", e.g. " to relax you ", " to sleep you ", etc. Examples of interpretations of some of these words :

constipation—" none for the pot ", " when the heart misses a beat "

antiseptic—" kills germs ", " ointment to kill germs ", " against septic ", " gun for firing at aeroplanes ", " knocks you out "

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bacteria— many answers associated this with teeth, e.g. " badness in a tooth ", " a mouth germ ", " germs from the teeth ". Is there an association with advertising here ?

menstruation—this word was excluded from the questionnaire given to one boys' class, but allowed to remain with a larger number of boys. 97% did not know the word ; 3% got it wrong (e.g. " a pane ", " mad "). 69% of the girls gave correct answers ; 25% did not know ; 6% got it wrong—(e.g. " bleeding from part of stomach ", " a change in men ").

How much can one expect the 14-year-old to know about first aid ? A question on this subject was included because road and home accident rates rise yearly, and discussion on prevention and first aid treatment may help to reduce these rates in the future. First aid is an important part of health education, and only a very small proportion of children learn anything of first aid after leaving school. Because of the number and variety of answers to the questions, it was decided to classify them in four categories : adequate action ; helpful action ; wrong or harmful action ; " don't know ". The following pattern emerged :

What would you do for :		
a bad burning accident ?	adequate	19%
	helpful	36%
	wrong	13%
	don't know	32%
a faint ?	adequate	27%
	helpful	33%
	wrong	21%
	don't know	19%
a cut which bleeds ?	adequate	32%
	helpful	42%
	wrong	8%
	don't know	18%

Girls showed a higher proportion of adequate and helpful answers and fewer wrong answers than boys. Examples of wrong action included : for a bad burn, " put iodine on it ". " put flour " ; for a faint, " pour water on face ", " slap face " ; for a bleeding

cut, " suck it ", " put a poltess on ". Examples of helpful action in case of a bad burning accident included " send for the fire brigade ".

The children would like to know more about first aid. The proportion who were unable to answer these questions or gave wrong answers shows that there is need for more up-to-date information. Many of the remedies suggested may have been usual in the child's home, but were far from helpful in the light of present knowledge.

Health habits

The second part of the questionnaire inquired into health habits. The questions were straightforward, but a fair criticism would be that they did not go far enough. The children were not asked about teeth cleaning, television viewing, baths per week, or what was eaten at home for supper or breakfast, because it was felt that the parents should know they were being asked. As the parents' permission was not sought, questions involving home habits were omitted.

Do you wash your hands after using the toilet ?

		Boys	Girls
Always	50%	33%	65%
Sometimes	47%	60%	33%
Never	3%	5%	2%

The fact that 50% always washed their hands, and only 3% never did, suggests that all the children knew that they should *always* do so. Was the reason for not doing so lack of facilities, an uncaring attitude, or lack of example ?

Do you ever borrow a comb for your hair ?

		Boys	Girls
Yes	67%	64%	70%
No	33%	36%	30%

Those who answered " yes " included many who qualified it by the word " sometimes ".

Thumbsucking and nailbiting are indications of some degree of emotional insecurity and anxiety, and an unduly high proportion admitted to nailbiting.

Thumbsucking		Boys	Girls
Yes	9%	11%	7%
No	91%	89%	93%
Nailbiting			
Yes	45%	40%	50%
No	55%	60%	50%

Possibly the nail biters of today are the smokers of tomorrow. The percentage who admitted to smoking the day before (21%) was rather lower than expected.

Did you smoke yesterday ?

		Boys	Girls
Yes	21%	35%	8%
No	79%	70%	92%

This question differently worded would no doubt have produced a different response. It is significant that 39% of all the boys and girls would have liked to know more about smoking and health.

Late bedtimes were universal. The majority retired between 10 and 10-30 p.m.

Bedtime		Boys	Girls
8-30 p.m.	2%	3%	2%
9-0 p.m.	7%	8%	6%
9-30 p.m.	23%	16%	30%
10-0 p.m.	33%	37%	31%
10-30 p.m.	22%	21%	23%
11-0 p.m.	10%	13%	7%
11-30 p.m.	2%	1%	1%
12-0 p.m.	1%	3%	0%

The boys' favourite food was fish and chips. The girls' favourite was meat—this included meat pie, shepherd's pie, liver, steak, etc. A wide variety of foods were listed, but the greatest number chose : fish, eggs, chicken, vegetables, salad, cheese, fruit. Unusual choices ranged from shrimps, pie crust, salami, crab, turkey, to Yorkshire pudding and Sunday dinner, and one boy said that his favourite food was " school dinners ". A small proportion of children wrote just " dinner ". Only two chose cake and biscuit. It is quite evident that icecream did not qualify as a food, for none of the children gave this answer.

Sweets were eaten by the majority most days of the week :

		Boys	Girls
Every day	27%	30%	24%
Most days	46%	40%	52%
Twice a week	14%	13%	15%
Once a week	13%	17%	9%

A question on choice of menu aimed at finding out whether the children would choose food suitable to their dietary requirements. The great majority of them did indicate by their choice that their food preferences and bodily requirements would both be satisfied.

Meat, potatoes, vegetables, jam sponge pudding	39%
Fish and chips, ice cream	13%
Sausage, beans, chips, jelly	13%
Stewed meat, potatoes, vegetables, roly pudding	11%
Boiled fish, potatoes, vegetables, piece of cake	9%
Cheese salad, rice pudding	7%
Ham sandwiches and crisps, fruit salad and cream	4%
Unable to indicate choice of menu	4%

Social requirements

What company does the 14—15 year old prefer outside school ? The following list covers most of the answers given. A small number of children replied with one word, e.g. " merry ", or said, for instance " nice quiet boys ".

Preferred company		Boys	Girls
Boys	25%	25%	24%
Girls	31%	36%	26%
Both boys and girls of own age	28%	22%	37%
Relatives	5%	3%	6%
Small children	1%	1%	1%
Own company	2%	2%	1%
Don't know	8%	11%	5%

A higher percentage of boys (36%) preferred girls' company, as against only 24% of girls who preferred the company of boys. This was contrary to expectations and forecast results. Perhaps a larger survey would show a different trend. One boy replied that he liked " nobody ".

Favourite activities outside school showed a lack of interest in things likely to be continued in adult life, and this was more marked with the girls than with the boys. In an age which can expect increased leisure time, this was an interesting indication. It appeared that dancing, swimming and going for walks, in that order, were most popular with the girls. Football, cycling, swimming and other sports were most popular with the boys. A small proportion (less than 20% of the total) preferred cinema and television. Some girls (10 out of the total) liked " going out with boys ". Some boys (4 out of the total) liked " going out with girls ". Only 9 children out of the total preferred youth clubs or other youth associations. Only 15 out of the total preferred reading.

Other activities ranged from train spotting, keeping pets, baby sitting, art, records, horse riding, " shooting pests ", playing out, " playing with the boys in our street ", to snooker, " smoking and drinking ", and the boy who said he liked best to " do nothing, just think ".

Interest in health matters

In reply to the question : would you like to know more about how the human body works ? the majority replied that they would :

		Boys	Girls
Very much	50%	43%	58%
Not sure	37%	45%	39%
No	12%	12%	12%
Don't know	1%	1%	1%

The most popular subjects on which they would like more information were first aid, hospitals, and modern problems of health, in that order. Did the children know what was meant by modern problems of health ? At least one girl listed the following subjects as those she wished to know more about : " hormones, cancer, and other modern medical fears ". We feel that this was a fair idea of what constitutes modern problems.

69% of girls wanted to know more about modern problems of
45% of boys health

70% of boys " " first aid
62% of girls

42% of boys wanted to know more about smoking and health
36% of girls

31% of boys „ „ the great discoveries of medicine

45% of the total did not want to know any more about any subject relating to their health.
36% did want to know more, and a few offered suggestions.
19% did not answer.

The girls were almost equally divided for and against more health education generally ; a larger proportion of boys (52%) said " No " or, as one boy put it, " not a right lot more ". This phrase accurately sums up the attitude of so many individuals to health education.

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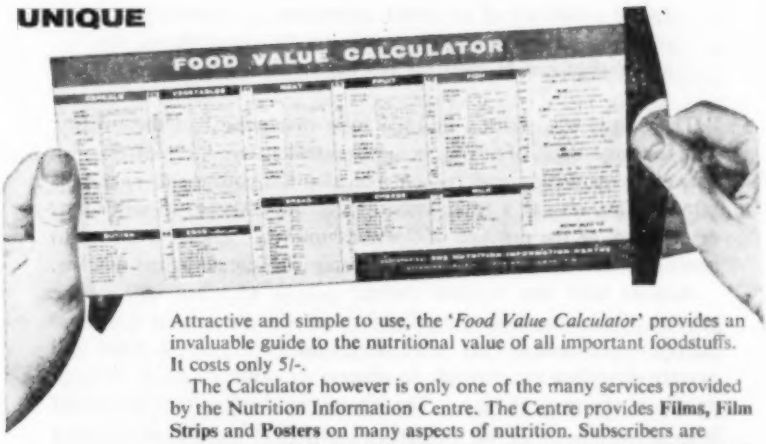

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WITCHCRAFT, SORCERY AND MENTAL HEALTH

By W. NORMAN-TAYLOR, M.D. (Lond.), D.P.H., D.I.H.,
Public Health Adviser, South Pacific Commission

> " *For if any adversity, grief, sickness, loss of children, corn, cattle, or liberty happen unto them ; by and by they exclaim upon witches. As if there were no God in Israel that ordereth all things according to his will . . . but that certain old women here on earth, called witches, must needs be the contrivers of all men's calamities . . . Insomuch as a clap of thunder, or a gale or wind is no sooner heard, but either they run to bells, or cry out to burn the witches.*" [1]

The above was written in 1584 by a man who had the quality, rare for those days, of having not only sufficient insight to distinguish between superstition and reason, but also the courage to speak his mind. This was at a time when expressing disbelief in witchcraft or criticism of the practice of " witch-hunting " might have lead to getting oneself burned at the stake along with the so-called witches.

Anyone who has worked among people who are still in the process of evolving from the primitive—as was the case in mediæval Europe—will realise that what Reginald Scot said in 1584 still exactly describes the attitude to disease or other calamity of such people at the present time. The interesting thing is that this belief is so universal. It is still current not only in Africa but in all other continents and among almost all races. Sometimes the emphasis is on witches, sometimes on ancestral spirits, sometimes on malevolent gods, sacred crocodiles, mountains, werewolves, leopard men, ghosts or fairies. Vestiges of this way of thinking have

[1]Scot, Reginald : *The Discoverie of Witchcraft*, London, 1584, new edition. London, 1930. Quoted in *Witchcraft* by G. Parrinder, Penguin Books, 1958,

persisted in our own European culture. It was not so long ago that we believed that disease was a punishment for " sin ". The belief in good luck, charms, mascots, or " the stars ", is similarly widespread among Europeans to this day. And how many of us, on being taken ill or meeting some other calamity, do not say " What have I done to deserve this ? ". To the African and the Melanesian—the two races best known to the writer—this is the automatic and obvious question when they meet bad luck of any sort, be it in health, courtship, trading, agriculture or gambling. Life is governed not by pre-determined laws of chemistry and physics, but by the relative influence of good fortune, or bad-fortune, and both, they believe, can to some extent be influenced by their behaviour. Appropriate rituals, or sacrifice to the agency concerned, will bring good-luck, while neglect or offence will bring the opposite.

Whatever explanation of disease or disaster is given, it is certainly never a simple matter of cause and effect. Human nature is apparently such that we cannot bear to think we are so unimportant, that nature can take its course and catch us up in events without knowing or caring that we, as personalities, are involved. To most people their own little world is the centre of the universe, and everything revolves round it. The concept that nature works on us in as completely detached a way as gravity works on a falling stone, is offensive to us and our *amour propre*. All good health workers are aware of this very different concept of the causation of disease. It was well expressed by an old health inspector in Nigeria who remarked to the writer " You know, Doctor, with us it is not a question of *what* caused me to get sick, but *who* caused it ".

The magic origin of disease

Most primitive people are careful not to offend any other person in case he or she is a witch and will utter a curse so that the offender is stricken with some sort of sickness, or if not a witch, will try to invoke the assistance of a sorcerer to do the same thing. For this reason they are exceedingly wary in their inter-personal relationships. Even bumping into somebody or accidentally upsetting a tray in the market place may be, in retrospect, regarded as the source of a sickness. This accounts for the " anxious to please " attitude sometimes commented on by Europeans, and, by the same token, such people are far more alarmed by a show of anger than one may realise. Self-assurance, dignity and leadership come only when

there is sufficient " power " or popular support to counterbalance this ever-present fear. Similarly most people will be careful not to commit a socially unacceptable act, since it may anger the ancestors or gods who will retaliate in this way.

Almost universal is the belief that there are certain unknown persons who can exert an evil influence of a magical nature. Sometimes the belief may be that they have the " evil eye " and that they can cause sickness in man or beast by a look. In other cases it is believed that they cast " spells " of some sort that can have a similarly unpleasant effect. This is witchcraft in its classical form. Just as in mediæval Europe, people in Africa still believe that by day witches are just like anybody else, but that at night they meet together and plot pestilential calamities on others. Among some people, for example the Bantu of East and Southern Africa, there is the belief that certain persons can quite unconsciously exert this evil influence with no malice aforethought. For example, a mother will be accused of bewitching her own child. The writer remembers a case in the Transvaal where a young mother had been driven out of her village (she was fortunate not to have been killed) because she was thought to have caused, albeit innocently, the death of her young babies. In this connection one should be very careful never to suggest to relatives, e.g. the mother-in-law, that a sickness has been due to someone's fault. It may well be so, of course. The mother may, not having enough milk, have fed the child on rough starch. But the suggestion, if made in the presence of someone already predisposed to believe evil of the person concerned, may be translated into terms which imply that magic or evil has been the cause, and this may have disastrous consequences.

Witch hunting

In popular European parlance, no strict distinction is made between witches and witch-doctors, but it is important to keep the difference in mind. This is easy if it is remembered that *witches do not exist*, and cannot because the very notion is impossible, whereas witch-doctors are very real members of society. When one suffers from some bad fortune it is to the witch-doctor that one goes to find out why, or rather, *who*. The type of answer given will, of course, depend on the questioner's idea of causation ; in some societies an offended ancestor may be blamed ; in other cases a living person, who may even be a close relative. The remedy prescribed may be sacrifices in the case of spirits, persecution in the case of a weak living person (e.g. an old woman, or a young

bride), or the indiscriminate distribution of gifts to, or holding a feast for, all the likely persons in the neighbourhood in the hope of including the witch who will thereupon release the victim from the magic.

The tragedy comes when the imagined witch is persecuted. In the old days death might have been the punishment, but even ostracism or divorce may still be a devastating injustice. For this reason in some countries, and the Union of South Africa is one of them, it is a criminal offence to accuse anyone of witchcraft. Unfortunately the very persons in need of protection are not the kind who would be likely to invoke the law on their own behalf.

The practice of witchcraft, that is to say the use of magic to do such things as cause babies to die, crops to wither, or women or animals to be barren, is clearly impossible and can exist only in the imagination. On the other hand, sorcery or black magic is definitely practised and can have a positive effect on the victim. In some cases it is a matter of downright murder, as when poisoning is resorted to under the cloak of magic. The legal position is then clear cut. In other cases it is some form of suggestion. The witch-doctor, or sorcerer, uses some method of bringing to the victim's notice that he has been bewitched. He may simply spread the rumour about, or he may leave some sign, e.g. a bat's wing, on the victim's bed or in a similar place. In New Guinea, the " whistle-man ", as he is called, " points the bone " at the person supposed to be at fault. In whatever way the victim becomes aware of the fact that he has been " named ", the result is the same. He gradually sickens and, in severe cases, may eventually die. The psychological mechanism can only work, needless to say, on someone of that particular cultural way of thought. Whether this can be called murder has often been debated, for the victim in fact kills himself by his own fears. Nevertheless the intention to murder is there. But prosecution has the effect of making it look as though the authorities believe in this sort of magic, whereas the best way of combating it is to ridicule it. Deliberate murder by practising sorcery is probably very rare however. Certainly Western doctors come across it only rarely as a possible cause of death. The writer, for example, has never personally seen a case. But exceedingly common is the *belief* by sick persons that they are the victims of sorcery or witchcraft, which is a very different thing. This belief, completely unfounded as it usually is, may nevertheless itself be sufficient to kill the patient, and the condition is known to medical science as " thanatomania ".

Psychogenic disorders

It is interesting to note that there are certain forms of sickness that are almost invariably attributed to supernatural causes. Among the illnesses in this category are such things as chronic wasting sicknesses, weakness, fits, spasms, relapsing fever, chronic headache, stabbing pain, paralysis, hunch back, sterility in women, delayed labour, impotence in men, all infant diseases, insanity, sometimes smallpox, and any condition which becomes chronic or does not immediately respond to folk medicines, e.g. leprosy. The witch-doctor will usually be consulted in the first instance about these complaints. Only when there is no improvement will the patient eventually go to the western trained doctor. Death, if we can call that an illness, is also almost always ascribed to supernatural agency.

It is often said that neurosis is rare in primitive or uneducated people. On the contrary, it is probable that hysteria is much more common than with us and an anxiety state is so common as to be regarded as normal. Most of the neurotic illnesses will be felt and described in terms of physical symptoms. The above list of symptoms shows that most of them are of the sort that are also seen in hysterical conditions, for example paralysis, fits, transient pains, delayed labour. Where hysteria is the cause, such symptoms will be readily relieved by " psychological " treatment. Even organic disease may have a hysterical overlay, that is to say there may be superadded neurotic symptoms of a sort appropriate to the cultural setting. These symptoms, too, will be at least temporarily relieved by the local " witch-doctor " or medicine man.

Even in European society at least 30 per cent of patients consulting the general practitioners are suffering from psychologically induced symptoms, or " psychosomatic " disease. In a society where the supernatural is so much more to the front, we would expect an even higher proportion, and this is very likely so. These cases, where there is no serious underlying organic disease, will probably be cured or relieved by the " psychotherapy " of the witch-doctor and will never be seen by the Western trained doctor. One often hears it said by doctors practising in the tropics that medicine is so much easier there—patients have clear-cut definable diseases which readily respond to specific treatment. The reason is that they are probably only seeing about half the total number of persons who consider themselves sick. The witch-doctor has probably weeded out all the functional cases and a large proportion of the organic cases with a functional element.

It is also probably true that psychological cures come easier to the witch-doctor of primitive society than to the Western psychiatrist. This is due to the fact that in the first place his relatively unsophisticated and simple minded clientele are more readily suggestible ; he has a well recognised place in society and people have faith in him, and he probably knows most of his patients personally. The Western psychiatrist is much more of a stranger ; his patients' private lives are unknown to him and they are more likely to be cynical or suspicious of what he can do. The witch-doctor has the convenient device of placing the blame for his patient's illness literally " in the lap of the gods ", whereas the Western patient on the other hand has to struggle with his *own* guilt complexes—and possibly sexual frustrations—before a cure is possible.

In the issue of *World Health* for July-August 1960 (page 26), there is a description of the activities of a priest in Ethiopia who has apparently treated 400,513 cases in four years. In the last three months 1,565 cases had been successfully treated. This sort of story can be told for any country in the world, including Europe or the United States. In backward countries people consult their medicine man first ; in Western countries people consult their " spiritual healers " (whatever pseudo-scientific name they may have) *after* scientific medicine has failed. And fail it must in a large proportion of cases if it is forgotten that symptoms may often have origin in the psycho-social setting.

Organic disease

It should not be inferred from this that the clearly organic diseases are therefore *not* attributed to witchcraft or sorcery. On the contrary, even a thing like a car accident may be blamed on some evil wisher. In Ibadan in 1958, when the leader of the opposition political party was killed in what was clearly an accidental car smash, it was attributed, at least by the rank and file of his followers, to the supernatural machinations of the party in power. It is not sufficient, for example, for us to convince a person that his illness is due to a germ, because his next question will be : " Yes, but who caused me to eat that germ ? ". If you then explain that the water which he has drunk was polluted by fæcal matter, he will conclude that a sorcerer has deliberately polluted it in order to harm him. Boiling or purification of water is then regarded simply as a means of " doctoring " it to free it from evil spells, a sort of counter-magic. Routine sanitary practices may be regarded,

and approved of, as prophylactic magic against the hypothetical possibility of deriving harm from those sources.

Similarly a person who falls ill, or meets with an accident, may get no sympathy because it will be assumed that it is his own fault, that he has offended the gods or ancestors, or insulted a witch. There may be a disinclination to help or nurse such a person lest that should offend the supernatural being responsible for the affliction, who may then afflict the helper in like manner. The writer once arrived on the scene of a bus accident in Nigeria. The victims were strewn in the surrounding bush. It was some time before he could get any of the passing lorry drivers to stop and help. One that drew up eventually explained that they were probably afraid that the " god " of that particular stretch of the road might be offended.

With the increase in the obvious efficacity of specific drugs for such things as yaws, malaria and diarrhœa, and the penetration of even the remotest areas by the wonder-working aspirin, more and more diseases are coming to be regarded as primarily amenable to Western treatment. Even the witch-doctor himself will come to the local dispensary for treatment of a wound, ulcer, or other disease recognised as non-spiritual in origin, and nothing incongruous is seen in this.

The witch-doctor as an oracle

Most so-called witch-doctors could more properly be called diviners or oracles, since they are consulted not only on health matters but on all sorts of problems in addition, particularly questions pertaining to the loss or acquisition of luck. The witch-doctor's opinion is invoked before undertaking any new enterprise, a journey or a trading venture, and, like the fortune-tellers in Europe, they are especially in demand on sexual questions—affairs of the " heart ".

Different witch-doctors have different techniques. Some simply throw a handful of human knuckle-bones on the floor and read the fortune in that. Others use a chain of cowrie shells or seeds in a similar way. The real seer goes into a genuine trance, usually either behind a screen or while wearing a devil mask. One witch-doctor whom the writer visited in Ibadan put on a voice that sounded like a strange high-pitched humming ; it was supposed to be coming from his ju-ju shrine behind a curtain, and it reminded one of the voice in an old-fashioned Punch-and-Judy show. There was also much ringing of bells, beating of drums and gongs, and

blowing of whistles. In other cases, the writer was told, the voice is more like that of a child.

It is not without interest that Milton, three hundred years ago, described an exactly similar scene, setting it in ancient Greece :

" The oracles are dumb, no voice or hideous hum
Runs through the arched rood in words deceiving.
Apollo from his shrine can no more devine,
With hollow shriek the steep of Delphos leaving.
No nightly trance or breathed spell,
Inspires the pale eyed priest from his prophetic cell ".[1]

The utterings of the oracle have to be " translated " either by the witch-doctor himself or by an assistant. In many cases the diviners appear to be able to reach the truth remarkably accurately, but whether this is due to some sort of extra-sensory perception or merely to extremely shrewd observation and deduction, it would be hard to say. In some cases it is the subject who is put into a trance or a state of hypnosis, in which case the true nature of his or her underlying fears comes tumbling out, true " catharsis " in the psychological sense. Persons accused of witchcraft can often be induced to give elaborate " confessions " while under the influence of suggestion or hypnosis, especially if their own feelings of guilt have taken this form. In some cases hypnotised patients or assistants are put through ordeals of strength or pain, which are credited by the spectators to the witch-doctor's magic powers.

The witch-doctor's place in mental health

Witch-doctors do definitely fill a place, a need, in primitive society. They fill a gap which Western medicine completely ignores in the tropics and is hardly aware of even in our own society. It would therefore be unwise to condemn all witch-doctors outright unless they are really doing evil or persecuting " witches ". Some of them not only relieve psychologically induced tensions, but give sound advice on future conduct ; they can diagnose and treat " mother-in-law trouble " or " love sickness " as well if not better than general practitioners in the Western world.

Nowadays, with a little education, has come a weakening of belief in the old order of things. People are beginning to become sceptical of magic. This is all to the good if it brings freedom from fear of the supernatural. But witchcraft and magic are a sort of invisible police force and one result of disbelief may be that evil intentioned persons may then feel free to commit anti-social acts—

[1]On the Morning of Christ's Nativity.

the so-called " detribalisation " effect. More important from our point of view is the effect on mental health. We are knocking away a simple and efficient escape mechanism. No longer can people find release by putting the blame on someone else ; they must instead look into their own souls with all the resulting sense of guilt or insufficiency. A psychiatrist in New Guinea remarked to the writer that he never saw cases of anxiety neurosis among the tribal people but, on the other hand, among the educated class—teachers, clerks and such-like persons—it was distressingly common. We have shattered the old world of these people and they had not, in New Guinea, fully emerged into ours. When trouble, disappointment or frustration came their way they had no means of dealing with it and the burden became intolerable.

Dr. Brock Chisholm, former Director-General of the World Health Organization, once said that mental health was likely to be the major public health problem facing the world in the second half of this century. In the tropics the importance of this might have seemed remote, but it may be nearer than we think.

THE MONGOL BABY

About one child in every 600 born in Britain is a Mongol. How to tell the parents, what to tell them and when to do it are questions which often give concern to those responsible for the task. *A Letter to Parents of a Mongol Baby*, prepared by a children's specialist and published by the National Association for Mental Health, 39 Queen Anne Street, W.1 (price 1s. 3d.) offers a sympathetic and constructive approach which should help parents faced with this tragedy.

HEALTH EDUCATION BY CORRESPONDENCE

Analysis of the personal health problems. of 199 readers of a women's journal

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THE medical correspondent of a women's journal was good enough to let us study the replies he had sent in answer to readers' questions during the five year period 1955-60. Both from the point of view of public needs and as an example of the way in which such correspondence should be conducted, these letters are an interesting contribution to our subject.

Of the 199 readers, 6 were men, 32 were single women, and the remainder were married women. Unfortunately ages were rarely given. The geographical distribution of the readers tells us little save that the journal in question is distributed in every region of the country and is also read abroad—one enquiry came from the Middle East, one from Malaya and two from Switzerland. The distribution of readers in the main regions of Britain was as follows : North Western 21 ; North Eastern 17 ; London 21 ; Home Counties 53 ; Midlands 30 ; South Western 11 ; Southern 12 ; Eastern 5 ; and Western 2. In addition there were 7 readers from Wales, 7 from Scotland, one from Northern Ireland and one from the Channel Islands.

Most of the problems for which the readers were asking help can be classified under ten main headings. The medical correspondent is also a regular feature writer in the journal, using a nom de plume, and as he is a gynæcologist it is hardly surprising that many of the questions dealt with pelvic disorders, sexual matters and pregnancy. This should not be taken to mean that

such questions form the main interest of women readers, and the questions from the single women are of a more general character.

The ten categories of problems are as follows :—

		No. of questions
1.	Gynæcological and marital	38
2.	Pregnancy and childbirth	20
3.	Child care	10
4.	Diet and weight	20
5.	Skin and hair	18
6.	Plastic surgery	15
7.	Drugs	7
8.	Circulation and varicose veins ..	20
9.	" Nerves "	8
10.	Miscellaneous diseases and symptoms	27

(figures for women readers only).

Among the questions submitted by the single women, only seven of the 32 were specifically " feminine ", and 3 of these related to the breasts and were of cosmetic rather than gynæcological interest. We cannot avoid a flash of sympathy for the reader who asked whether pregnancy could occur even if no orgasm had been experienced, and also for the woman who wanted advice on contraception. She had suggested asking her married friends, but she was advised to try the Family Planning Association and not to go to a chemist.

The other questions from single women were on general subjects. It was surprising to find that one reader had asked whether there was an association between polycythæmia rubra and coronary thrombosis. This was a State Registered Nurse, however, one of two who appeared in this correspondence. The other nurse asked a question on weight reduction which would not affect the shape of the bust. She was told that no hormone would increase the size of the bust without causing irregular menstrual bleeding, and that it was better to tone up the pectoral muscles by exercises (" push ups ") or to wear a padded brassiere. Other questions related to aspirin, varicose veins, skin rashes, cyst in the jaw, headache, residence for bronchitis, borborygmi, pain in the legs, underweight, tuberculosis of the hip, slipped disc, and corsets for painful backs. One reader asked whether it was possible to avoid dreaming, and was advised that it was not ; she should try reading a pleasant novel in bed and see if she could dream about that ; colour dreams were possible.

To the woman who asked whether an osteopath could help her painful wrist the doctor replied that it was possible that an osteopath might help, but all reputable osteopaths belonged to a responsible organisation. Why should she not try the physical medicine department of the local hospital ?

This group contained three readers who had complaints to make about the doctor's own articles. To a reader who thought that more information on the details of surgical operations should be given he replied that the offending article had contained what a layman should know. Why not enrol as an assistant nurse at the local hospital ? To two teetotal readers who took offence at his moderate views on alcohol he stood his ground, replying : " What was written in the article is what large numbers of doctors believe . . . It is not harmful to drink in small quantities " and " Alcohol has received the support of medicine and the Church."

The six male readers displayed great diversity of interests. A " St. John's man " wanted to know if it was illegal to cut the umbilical cord—presumably in a first aid situation. He was informed that it was dangerous to cut the cord inexpertly, but not illegal. This is an interesting reflection of public opinion on medical matters—there seems to be difficulty in discriminating between what is illegal and what must be left to professional judgement. Of the remaining male correspondents, one wanted information about fissure in ano and hæmorrhoids, one on voluntary cancer research funds, one on the outlook for a child with a melanoma, one on circumcision, and, finally, one wanted to know whether hormones could make straight hair curly.

The question on melanoma was a delicate one and the reply given is an excellent example of how one should tackle correspondence of this kind. It is impossible to withhold all information and to confine one's advice to consulting the family doctor, and at the same time there must be a mixture of caution and reassurance. In this case the doctor wrote : " . . . . there is unfortunately a little truth in the fact that melanomas can become cancerous, but the risk is not very great . . . the school doctor is able to measure the size of the moles . . . there should be no friction from clothes or shoes . . . if removal is necessary then a wide area of skin is taken away." The correspondent was warned that if moles become malignant the condition is serious, but he was assured that probably nothing would happen " in the next 50 years or so."

As might be expected, the questions from the married women were largely concerned with problems related to menstruation,

sexual intercourse, birth control and pregnancy. These questions included three on adoption and seven on birth control, of which three were straightforward questions on contraception (including oral contraception), and the others dealt with ovulation. Variations on this theme included one question on voluntary sterilisation and one on artificial insemination, and one reader wanted to know whether the Fallopian tubes could be repaired after tying.

In the group of questions concerned with pregnancy and childbirth, interest was shown in toxæmia and in painless childbirth, both the Grantly Dick-Read and the French systems being mentioned. Of the less expected type of question there was one which asked whether retroversion of the uterus could cause abortion.

In this group also we find examples of how to tackle delicate or ambiguous questions. One woman asked vaguely about " personal hygiene " (a euphemism which often means menstrual hygiene). However, the doctor sensed that there was more to it than that, and he asked for a clarification—" If the writer means ' birth control ' then a syringe is useless, if she means ' washing away a discharge ' then it is dangerous ". He went on to dispel the myth that married women should douche regularly : " There is no reason why a young married woman should do anything different from an unmarried woman ", and he advised that if there was an excess of the normal vaginal discharge, then a douche can should be used in the bath.

Similarly, when a reader asked for a description of the effect of twinning on both the mother and the twins, he explained that he could not embark on a general description—could she put some specific questions ? To a woman who had been told by her doctor that there was no evidence of cancer of the uterus, but who could not believe this, the reply was : " As nobody has told you that you had cancer, then I should not be so sure that you have ". It was right to remove the uterus if the cytological picture suggested that cancer was starting. If the surgeon had told the patient that the disease was eradicated, then it was.

The group of questions on child care included three on vaccination against poliomyelitis. There were single questions on the use of silver nitrate in babies' eyes, circumcision, tonsillectomy, infantile eczema, urgency of micturition and birth marks. On the question of tonsillectomy, the reply was given that removal of tonsils is necessary when glands in the neck are the result of septic tonsils. Another cause of parental anxiety and indecision was revealed in a question as to whether it was justified to give the third

injection of poliomyelitis vaccine when the child had already shown an allergic reaction. If the child were his own, the doctor replied, he would not give the third injection in this case, unless there was a poliomyelitis epidemic. The appeal of this approach is obvious.

Among the general conditions there was a relatively large number of enquiries about varicose veins and plastic surgery respectively. In many cases the readers were advised to consult their family doctors so that they could be referred to a specialist. One reader was told that operative treatment of varicose veins was never advised simply because the veins were unsightly, only when symptoms were present. Another reader who complained of pain in the legs which could have been due to varicose veins was advised to wear court shoes to avoid overstretching of calf muscles and to raise the foot of her bed. Cold baths (shades of *B.O.P.*!) might also help, but the family doctor should be consulted if the trouble did not clear up.

Amongst the enquiries about plastic surgery were a number of married women who were dissatisfied with their breasts, which they thought were too large or pendulous. In all cases they were told of hospitals where specialists in plastic surgery might be consulted, but they were warned that the family doctor's approval was necessary.

Eight readers enquired about weight problems. Of these only one was underweight, and she was warned that it is more difficult to put on weight than to slim. One would have thought that there was a standard reply to questions on weight reduction, but from the cases in this series this is obviously an oversimplification. With the use of preludin for weight reduction and with the increasing public knowledge of hormones, more complicated problems are raised than those concerned with diet and exercise. In all save one case—where a warning against snacks and tea-drinking (with milk) was given—hormones were mentioned. The firmness with which the facts regarding the relationship between food metabolism and weight were expressed is admirable : " If 2 lb. of food are eaten and the subject weighs herself afterwards, she will weigh 2 lb. more. Metabolic processes do not happen in minutes."

A complicated situation which would not be expected in a question on weight reduction obviously lay behind the enquiry which produced the following reply : " Preludin in large doses will stop the periods, but this does not rule out the chance of pregnancy ". This reader was advised to consult her doctor. In general readers

were advised to avoid taking preludin too long, to consult their doctors about the use of drugs, and to limit their diet.

There were fourteen letters on the subject of skin disorders. Of these, three related to acne, two to allergic dermatitis including infantile eczema, and two to " itching between the legs ". The remainder contained questions on peeling nails, the removal of warts, styes, facial hair, vague descriptions which might have been papular urticaria, and " general skin disorders ". In all these cases a personal consultation with a doctor was desirable, and in the case of styes and the " itching between the legs " the possibility of diabetes was not overlooked and reference was made in the reply to the testing of urine. Quite apart from these skin cases there were four questions on diabetes, and all these were referred to the British Diabetic Association.

Finally, there were 32 enquiries which cannot be classified, and all that we can do is to list them as follows :—

1. Mother has a lump in the gall bladder region.
2. Is there a relationship between circumcision and cancer ?
3. What drugs are there similar to aspirin ?
4. Dissatisfaction with own doctor.
5. Remedial corsets.
6. How to sterilise drinking water.
7. Is there a connection between disseminated sclerosis and rheumatism ?
8. What kind of electric pad could be used for rheumatism ?
9. How to prevent recurrence of slipped disc.
10. What foods contain iron ?
11. The cause of foul flatus.
12. What is the difference between butter and margarine ?
13. What tranquilisers can be taken before going to the dentist ?
14. What is the value of brewer's yeast as a tonic ?
15. Complaint about sewage disposal system.
16. Complaint of husband's indigestion.
17. Treatment for a blocked tear duct.
18. Low residue diet for an elderly person.
19. Nocturnal micturition.
20. The cause of yellow in the white of the eye.
21. Diet for duodenal ulcer and steatorrhœa.
22. Larsen's Swedish milk diet.
23. Treatment for migraine.
24. Diet for arthritis.

25. Headaches.
26. Frequency of micturition in a child.
27. How much should one tell the doctor ?
28. What are thiamine and oleolecithin ?
29. The cause of cerebral thrombosis.
30. Hypnosis for insomnia.
31. Surgical support for a slipped disc.
32. Why are drugs not advertised to the public ?

Some of the replies are of special interest. Referring to cancer and circumcision, for example, the doctor said that he had prepared an article on this subject for a journal but editorial policy had forbidden the mention of cancer at all. The two questions dealing with the doctor-patient relationship were handled tactfully. Even if the patient was dissatisfied with her doctor, she still needed help and it would be quite unethical to suggest that she consulted any one else without approaching her family doctor. To the woman who wondered whether she was wasting her doctor's time, the reply was given that she should tell him everything.

The commonsense of so many of the other replies is refreshing and again a model which can be followed in dealing with awkward questions. There was no connection between disseminated sclerosis and rheumatism, but the associated muscle weakness leads to joint stiffness. As there was a small price difference between butter and margarine, children should eat butter ; but not adults, because of the danger of coronary disease. Hypnosis can be obtained through the National Health Service, but at the age of 56 less sleep is needed than at the age of 36. A remedial corset can be obtained through the N.H.S., but the surgeon has as much say in it as the corset makers.

The study of these 199 individual questions is of great interest, but no conclusions can be drawn. Whether these problems are representative of British women generally it is impossible to say without adequate control studies. It would also be wrong to infer that the women could not have obtained the answers to many of their questions from their doctors or health visitors, and that poverty of communication is the reason for the popularity of correspondence on health matters. Certainly the readers had the advantage of specialist advice and although the medical correspondent is a gynæcologist he refers many questions to colleagues when the need arises. The general impression is that all these questions have arisen from personal problems rather than curiosity, but the wide range of questions indicates that health education

needs have no limitations. The emphasis on pathology is also important. We must not be doctrinaire and assert that positive health concepts are alone worthy of attention by health educators. People usually have problems arising from pathology and they have anxieties in which they need explanation and reassurance. In answering their questions not only may complications or a recurrence be avoided, but we are adding to the weight of accurate knowledge possessed by the public. The readers who asked these questions must have discussed the replies with friends and relations, so that knowledge was being disseminated over a wide field.

The thing which clearly emerges is the difficult nature of health education by correspondence. Knowledge and style are important, and the feature of these replies was the straightforward common-sense language which neither talks down to the reader nor conceals the real issue with an over-anxiety to reassure. Readers were told frankly what the issue was and the firmness of the tone was itself reassuring. But the job is a delicate and difficult one. As the doctor himself wrote to a reader : " The role of a medical writer is that of a tightrope walker. Please indicate to me how I could have balanced more evenly on the tight rope."

PUBLIC INFORMATION IN A FLUORIDATION REFERENDUM

By WILLIAM A. GAMSON, Social Science Program, Harvard School of Public Health

LEADING opponents and proponents of fluoridation share a dismay at the general level of public information about the subject of fluoridation. Those in favour frequently urge a lengthy educational campaign[1] while those opposed express similar sentiments for educating a public which they perceive as relying in an uninformed manner on the word of "so-called authorities." How well informed is the public and what are the likely consequences of an "educational" campaign?

It has been widely assumed that there is a strong positive correlation between education and favourable attitude toward fluoridation. Proponents of fluoridation, while admitting exceptions, have generally regarded those who vote against the proposal as of limited education and, hence, easily confused by anti-fluoridation arguments. Several studies have tended to confirm the relationship between low education and anti-fluoridation attitude. Green and Briggs[2], in comparing 27 Massachusetts communities that have accepted fluoridation at the time of writing with 26 that rejected it, found that the median education of towns in favour was significantly higher than that of rejecting towns. They compared communities on size, median family income, proportion of children, population growth rate, and political party affiliation as well as education. Among all the variables studied, median education had the highest correlation with fluoridation outcome.

Taylor, Munro, and Fuqua[3] found in a study of Fairfield, California, that those with high education were inclined to favour fluoridation. The Mausners[4] also report that in their study of Northampton, Massachusetts, a large proportion of anti-

fluoridation voters failed to finish high school. Among high school and college graduates, the majority favoured fluoridation.

Voters in Cambridge, Massachusetts

Shortly after the Cambridge, Massachusetts, referendum of November, 1959, we selected a probability sample of 190 registered voters living in one Cambridge precinct on election day. Interviews were completed with 141 respondents or 74% of the sample. This area consisted of a primarily lower middle class and working class population, about half with less than high school education, predominantly Catholic (71%) and frequently of second and third generation Irish or Italian origin. Fluoridation passed in this precinct by a narrow margin.

By breaking education down into more refined groups, it is possible to learn whether the correlation between highest grade of school completed and position on fluoridation is linear or more complicated. The measure of position on fluoridation combines interest in the issue, attitude, and vote. Various permutations occurred and by combining these on a logical basis, a convinced, a moderate, and a weak group were formed for proponents and opponents. Table I suggests an unexpected non-linear relationship

TABLE I

Fluoridation position by Education

Highest Grade Completed	% in Favour of Fluoridation[a]	Total Number
Less than 8th grade	76%	17
8th grade	50%	18
Some high school	56%	32
High school	58%	38
Some college	72%	18
College or more	77%	13
$p\ (\chi^2 4 = .94, 2\ d.\ f.) < .10$[b]		

[a] Combining convinced, moderate, and weak proponents.

[b] The chi-square is based on a comparison of those with less than 8th grade with the combined 8th grade to high school group and with those with some college or more.

between education and position on fluoridation. Those with less than eighth grade education are strongly for fluoridation, as are those with some college education or more advanced education, but the in-between groups are less favourable. However, a warning is in order here. A shift of only a few cases among those with less than eighth grade education would remove the non-linearity. Interviews were not obtained with 26% of the sample and there is some evidence[5] that the non-respondents were more heavily against fluoridation than those actually interviewed. Since low education groups are also generally over-represented among non-respondents, it is possible that differential response rates are contributing to the high percentage in favour among those with less than eighth grade education[6].

Since almost all of those with less than eighth grade education were older people (only one was under 50), it is reasonable to ask whether age rather than education is the important variable. To explore this possibility, we compared fluoridation position and education for those aged 50 years or over. Table II again suggests that those with very low education are *more* favourable to fluoridation than are those with medium education. Almost three-fourths of those with a grade school education or less are in favour of fluoridation, while less than half of those with high school education *in the same age group are in favour.*

TABLE II

Fluoridation position by Education for those of 50 years of age or older

Educational Level	% in Favour	Total Number
8th grade or less	74%	27
High School[a]	44%	25
$p\ (\chi^2 = 3.71) < .05$		

[a] Only five respondents over 50 went beyond high school and these are excluded from the table. Three of these people were in favour of fluoridation.

An analysis of reasons given by our respondents for favouring or opposing fluoridation shows a vague and frequently incorrect conception of what the claims for fluoridation are. This should surprise nobody, but it is somewhat startling to realise that those

who voted for fluoridation thinking it to be *water purification process* provided the margin of victory in Cambridge many times over. In 1959, fluoridation passed in Cambridge by 42 votes, with over 32,000 votes cast, and extrapolating from our small sample of one neighbourhood, there were probably between 2,000 and 3,500 votes in favour cast by people with this misconception.

Age and education are clearly related to the misconceptions of fluoridation supporters. Of those who do confuse fluoridation with some other process, 85% did not complete high school, while only 40% of those who state that fluoridation will help the teeth or that it will help children, have less than a high school education ($p < .05$). Those proponents with misconceptions are also older. Only 38% are under 50 years of age while 74% of those who give more accurate reasons are under 50 ($p < .05$).

Comparison of opponents and proponents

Respondents were asked to "agree" or "disagree" with several statements about fluoridation which were presented in the form of opinion items to avoid giving respondents the feeling that they were being quizzed. While for each item at least 20% replied that they didn't know the answer, in general, correct answers were chosen more frequently than incorrect ones. For example, 65% of the sample agreed that "Fluoridation will help prevent cavities in children's teeth," against only 14% who disagreed. Of the six offered statements, two were actually correct and four were incorrect. In addition to the above, the other correct item stated that "The American Dental and American Medical Associations approve of fluoridation" (57% agree, 14% disagree).

Some incorrect statements have a fairly high degree of acceptance. About 38% agree that "Fluoridation helps the teeth of adults"[7], (42% disagree) and 39% agree that "Fluoridation makes the water taste unpleasant" (33% disagree). However, only 12% believe that "Sodium fluoride is perfectly harmless in any quantity" (54% disagree) and 11% believe that "Evidence shows that fluoridation probably causes diseases" (53% disagree).

In comparing opponents with proponents, it is important to recognise that this paper assumes the factual correctness of statements which are sometimes challenged by opponents and the incorrectness of some statements which are asserted in anti-fluoridation literature. Thus, we cannot interpret differences between opponents and proponents strictly in terms of differences in knowledge. However, some of the incorrect statements are

favourable to fluoridation and even though they are not claimed to be true by professional proponents, they are frequently accepted by those who vote in favour.

TABLE III

Fluoridation position by information on Fluoridation

		Agree	Disagree	Don't Know
" Fluoridation helps the teeth of adults "	Pros :[a]	57%	33%	10%
	Antis :	11%	71%	17%
"Sodium fluoride is perfectly harmless in any quantity "	Pros :	12%	53%	35%
	Antis :	9%	71%	20%
Pro-Fluoridation Correct Statements				
" The American Dental and Medical Associations approve of fluoridation "	Pros :	75%	6%	19%
	Antis :	37%	31%	31%
" Fluoridation will help prevent cavities in children's teeth "	Pros :	90%	3%	7%
	Antis :	29%	43%	29%
Anti-Fluoridation Statements				
" Fluoridation makes the water taste unpleasant "	Pros :	36%	45%	19%
	Antis :	51%	23%	26%
" Evidence shows that fluoridation probably causes diseases "	Pros :	3%	75%	22%
	Antis :	31%	23%	46%
Number of Cases : Pros = 69, Antis = 35				

[a] Weak proponents and opponents are omitted from this table. The results for these groups are generally the same except that they have a considerably higher percentage of " Don't Knows."

Table III shows little information advantage for either side. There are generally more " Don't know " responses by opponents but this response can reflect either lack of information or conflicting information. Many of the 46% who respond " Don't know " to the statement that " Evidence shows that fluoridation probably causes diseases, " feel that information on this question is inconclusive. By and large, proponents of fluoridation have learned the central lessons of the literature—only 3% *reject* the statement that fluoridation will help prevent cavities in children's teeth, and

only 3% *accept* the statement that fluoridation probably causes diseases. On peripheral arguments, they are less informed. A majority believe that fluoridation makes the water taste unpleasant.

Opponents of fluoridation seem less convinced of the opposition version of the facts. Less than half deny the effectiveness of fluoridation in helping children's teeth and less than a third believe that evidence shows that fluoridation probably causes diseases. In general, opponents are more likely to *reject incorrect statements* favourable to fluoridation but proponents enjoy a similar advantage when it comes to the rejection of incorrect statements which are unfavourable to fluoridation.

Opponents and proponents were approximately equal in identifying the outcome of the referendum (72% of the former and 69% of the latter did so correctly). However, opponents were significantly ($p < .05$) more likely to report having talked about fluoridation with friends or family (67% did so) than were proponents (49% did so).

Education and information

In many cases, education is a better predictor of correct response to the information items than is fluoridation position. Only 25% of those with some college education believe that fluoridation makes the water taste unpleasant, while 63% of those with a high school education or less believe this ($p < .01$). At the same time, differences between proponents and opponents (see Table III) on the same item were considerably smaller ($.10 > p > .05$).

Where there is a considerable amount of misinformation among proponents in general, the percentage of those with accurate answers increases fairly sharply as education increases. Half of those proponents with some college training believe that fluoridation will help the teeth of adults but 86% of those with grade school education or less think this ($p < .10$). Similarly, the percentage of proponents who believe that sodium fluoride is harmless in any quantity decreases from 36% in the grade school group to 12% in the college group (p = NS).

Oddly enough, this relationship does not hold up for the opponents of fluoridation. On four out of six items, those with high school education are more misinformed than those with grade school or less. The differences here are small and irregular and not statistically significant but they suggest again what one might call the "little-education-is-a-dangerous-thing" hypothesis.

Age is less related to information on fluoridation with one

exception. All eleven of the proponents over 60 believe that fluoridation will make the water taste unpleasant while 36% of those under 60 believe this ($p < .001$).

Some implications for fluoridation campaigns

The assumption that an educational campaign will necessarily increase the size of the pro-fluoridation vote is undermined by the results just reported. In its most naive form, this assumption implies an electorate where those who are exposed to the " facts " vote in favour while those who are ignorant vote against.

In fact, as indicated above, there is little evidence in this study that proponents of fluoridation are generally better informed or more interested and aware of the issue. A much more complicated model of electoral behaviour is necessary. There are sub-groups among proponents and opponents who will be affected differentially by an educational campaign.

Among the proponents, there is a sizeable group of well-informed and interested individuals who would undoubtedly be strengthened in their convictions by a campaign and might even make attempts to convince others. On the other hand, the group of misinformed proponents who confuse fluoridation with chlorination or have little conception of what it is, may well be " educated " into the opposition. In trying to answer questions that have not occurred to these people, pro-fluoridation information will undoubtedly raise doubts.[8]

The burden of proof in a fluoridation campaign rests on the proponents. There is a sizeable group of potential converts in any campaign—those who vote against fluoridation without being convinced that it is harmful or ineffective. However, it is always more difficult to resolve doubts than to create them. This means that changing the vote of a weak opponent will be more difficult than creating doubts in the mind of a misinformed proponent.

The counsel of this paper, then, is not that the proponents' campaign is doomed to failure. But, if an " educational campaign " means a detached and objective presentation of facts, then such a campaign could backfire by transforming uninformed proponents into semi-informed opponents without converting an off-setting number of weak opponents. The alternative to such a campaign stems from the recognition that the task is a political one—that of winning a referendum. The traditional arsenal of political techniques is appropriate and proponents, if they expect to win, should frankly accept that they are *propagandising*, not simply

educating. Those who believe that the truth needs no advocate need only witness a few of the more heated fluoridation controversies.

References

[1]For example, Charles A. Metzner, "Referenda for Fluoridation," *Health Education Journal*, (September, 1957), Vol. 15, 168-178, suggests this but recognises the difficulties involved in carrying on a successful campaign.

[2]Arnold L. Green and Jean Briggs. "Fluoridation in Massachusetts: A Statistical Comparison of Communities." Social Science Program, Harvard School of Public Health, December, 1957, (Mimeographed), 15 pages.

[3]George F. Taylor, Michael S. Munro, and J. B. Fuqua. "Fluoridation Study in a California Community." Political Science Department, Stanford University, 1956, (Typescript), 23 pages.

[4]Bernard Mausner and Judith Mausner. "A Study of the Anti-Scientific Attitude," *Scientific American*, (February, 1955), Vol. 192, 35-39. Thomas Plaut, "Analysis of Voting Behaviour on a Fluoridation Referendum," *Public Opinion Quarterly*, (Summer, 1959), Vol. 23, 213-222, also reports that precincts supporting fluoridation in the Cambridge, Massachusetts referendum of 1953 had a "very small proportion of adults without high school diplomas."

[5]See James H. Laue, "Who is the Non-Respondent? Explorations on the Fluoridation Issue." Harvard University, Department of Social Relations, March, 1960, (Typescript), 40 pages.

[6]The referendum item asked: "Shall the public water supply for domestic use in this city be fluoridated?" It is doubtful that confusion or misreading of the wording contributed to the results in Table I.

[7]There is apparently some doubt about the incorrectness of this statement but pro-fluoridation leaders in Cambridge made no claims of efficacy after the permanent enamel has been formed. For practical purposes, those who were reasonably well-informed about fluoridation would have rejected this statement as untrue in November, 1959.

[8]See Wilbert E. Moore and Melvin M. Tumin, "Some Social Functions of Ignorance," *American Sociological Review*, (December, 1949), Vol. 14, 787-795, for a discussion of how, in many social situations, ignorance serves as "an active and often positive element in operating structures and relations."

WALLCHARTS

THE HUMAN BODY: 1. SKELETON AND MUSCLES, 2. CIRCULATION OF THE BLOOD AND LYMPH, 3. THE NERVOUS SYSTEM. (Educational Productions Ltd. 1960. Each chart 60 in. x 40 in., in two sections. Coloured. Price 12s. 6d. each, or 41s. on linen).

This attractive series of three charts will be a useful visual aid for direct teaching in secondary schools and with other advanced classes. On the first chart the principal muscles are shown in association with the bones, another diagram being concerned with the skeleton alone. The second chart illustrates the circulation of the blood and lymph in a clear and dramatic manner with two illustrations. Smaller drawings show lymph vessels and glands. The third chart is concerned with the nervous system, and smaller diagrams illustrate the spinal cord, the brain, a nerve cell and fibre.

If details are important in the teaching situation, these drawings will be most useful for they are large enough for demonstration. In general, however, they are too detailed and dissected for an overall pattern of various organ and tissue relationships to be gained.

D. LYNTON PORTER.

BOOKS

CANCER : THE SIGNIFICANCE OF DELAY, by Robert Sutherland. (Butterworth. 1960. Pp. 206. Price 30s.)

One of the purposes of cancer education, although there is no need for it to be the only one, is to make people aware of the significance of symptoms so that they will be induced to seek early advice. The Registrar General's analysis of cancer mortality gave a severe jolt to this line of thought when it was shown that save in one or two instances the duration of symptoms did not influence the mortality rate. In some cases even, the prognosis was better when the symptoms had been present for a long time. This paradox should not be a mystery to anyone with a knowledge of the pathology of malignancy, and the apparent anomaly disappears when it is remembered that a tumour with a low power of invasion and metastasis will not be so dangerous after a few months as one with a high power of invasion will be after a few weeks. This does not alter our policy of public education, for many will still benefit from early treatment and even those who do not survive for the conventional five years will still derive a primary benefit from treatment.

This monograph examines the significance of delay in the treatment of cancer. As the author says, earlier treatment *may* mean life or death (reviewer's italics). We must ensure that everyone has early treatment but we must understand that the benefit is statistically moderate. In the case of cancer of certain sites the gain may be substantial, however. As breast cancer causes one-fifth of all female deaths from cancer in England and Wales, immediate treatment might raise the 5-year survival rate by one quarter.

In a massive feat of scholarship Dr. Sutherland has reviewed the literature dealing with appraisal of malignancy, prognostic variables, and the duration and prognosis of cancer. An encouraging thought is that fundamental research has made so much progress in the understanding of the life of the cancer cell. The picture that emerges is fascinating. Cancer cells are derived from the host's tissues, but behave as a foreign body. The host, on the other hand, does not recognise them as a foreign body and the usual mechanisms of defence are inert or useless. Nevertheless the host has defensive powers which are revealed in the extreme case of spontaneous regression, or in the more common *carcinoma in situ :* and in the lymphocytic and histiocytic reactions which limit growths and prevent metastases.

Antibody formation to cancer cells can occur, and has been demonstrated experimentally when cancer cells have been attenuated by deprivation of oxygen and then injected. The malignant cell, however, may lose its antigen and so the host fails to " recognise " it. There is evidence for the existence of three levels of natural control by the host—local, immunological and hormonal. Cancer cells must gain entrance to regional nodes in sufficient number to thrive—clumps of cells metastasise and discrete cells do not. Sites of metastasis seem associated with conditions under which cancer cells thrive rather than merely with the means of their transport. Variability exists in tumour cells, the host's reaction, and the environment—here mainly chemical, although radioactivity is involved.

As regards the appraisal of malignancy, the author comments that degrees of malignancy and the criteria of cure are very difficult to assess. For example, the conventional classification into early and late cases is meaningless. A better definition would be metastasising, infiltrating, metastasising and infiltrating. Survival from cancer does not necessarily mean freedom from cancer, for many patients have distant metastatic deposits. Prognostic variables are concerned with the tumour characteristics, the host characteristics and the environment. The host's hormonal balance and age are significant factors, and hormonal control seldom, if ever, depends on a single endocrine gland. As regards age, the author advances his own interesting concept of gross stress tolerance which naturally declines in the middle and later years. This section is of general interest apart from its application to cancer.

When cancer is treated the survival rate is better where the cancer is in an accessible site, and in certain sites there is a converse direct relationship between the median duration of the symptoms before treatment and the stage of the disease. In other sites the relationship

is directly inverse, and in yet others it is intermediate. It is notable that the Manchester Committee have based their approach to public education on these facts.

The reader must bear in mind that this book does not deal with the aetiology of cancer but with those factors which determine whether a malignant growth can thrive and metastasise. No one could peruse these pages, tightly packed with facts, and fail to recognise that fundamental and clinical cancer research are making headway. As Kennaway once said, cancer research lies buried under its own literature, and Dr. Sutherland has performed for us the service which Kennaway hinted at when he said that a research worker was needed to extract from this formidable mass of literature the essential facts. This is not an eclectic work, and the conclusions follow naturally from the facts and are, therefore, scientific. From the point of view of health education, our task is to devise methods of presentation of this fascinating story.

A. J. DALZELL-WARD.

NUTRITIONAL EVALUATION OF FOOD PROCESSING, edited by R. S. Harris and H. von Loesecke, (John Wiley & Sons Inc. New York—London. 1960. Pp. 612. Price 96s.).

It is an inevitable consequence of ever more civilised living that food is subject to an increasing multitude of physical and chemical influences in its progress from farm to frying pan. Alongside public appreciation of the convenience of pre-packed, pre-cooked, processed foods is a measure of concern at losses of genuine flavour and of the possible pathological consequences on the consumer of more and more sophistication.

Whilst the authors note that the final test in the matter is a biological one, depending not only on the known composition of the food but also on the individual consumer, the scope of this work is essentially confined to consideration of the effects of processing in vitro. The possible toxic or carcinogenic effects of the chemicals and processes used receive only passing reference.

Over thirty authors in the American fields of food technology and research contribute to the task of dealing with this vast subject, food by food and process by process, in which connection we are reminded that there are approximately four dozen known nutrients, and the effects of processing upon them are largely a result of their sensitivity to the pH of the solvent, to oxygen, light and heat, or a combination of these.

Most commendably, consideration commences at agricultural level. Noting that every process down the line results in some nutrient loss, the authors point to the obvious value of highest possible levels of nutrients at the outset, and make valuable reference to genetic, hormonal, and antibiotic means in the initial improvement of nutritive quality. Protein and vitamin contents of seeds and fruits can be manifoldly increased by genetic means and more easily than by any other approach.

Valuable, in terms of feeding world populations, as some of the deliberate acts of food processing may be, much substantial loss in nutritive value arises from the inevitable processes of harvesting, storage, handling and transport. All of these are fully dealt with, and practical advice is given on how such losses may be minimised at every stage.

The chapters dealing with the effects of processing of cereals contain much factual information of particular interest to those who advocate cereals of the high extraction rate as fundamental nutritional health education. It is evident, for instance, that an almost complete destruction of Vitamin E results from the use of the bleaching agent chlorine dioxide. Significant differences in the nutritional values of the various types of breakfast cereals also emerge. Considerable protein damage results from severe heat treatment methods employed in producing some types of puffed cereals.

The authors are clearly conscious of current world food problems in their treatment of such subjects as the use of additional sources of protein in the form of oilseed meals and the anti-nutritional factors which these may contain. The effects of ionising radiation in food preservation are also given careful consideration.

The work is essentially a well paragraphed and indexed book of reference, each chapter containing its own comprehensive bibliography. It will be of undoubted value to the food technologist, dietician, teacher of domestic science, and nutritional health educator.

K. VICKERY.

TEXTBOOK OF HEALTHFUL LIVING, by Harold S. Diehl. (McGraw-Hill. 6th edition 1960. Pp. 484. Price 52s. 6d.)

This is an American textbook and it claims to be written " for the educated and responsible citizen ". However, in England, it will be most helpful to people such as school teachers and health visitors who are actually engaged in health education.

In any medical textbook there must of necessity be much repetition. Anatomy does not alter, but it can be made more exciting by good presentation. This book succeeds here, and the outstanding commendation rests on its choice of subjects : chapters on Mental Health, Health in School and on the Job, Modern Parenthood, Possibilities of Longer Life and Better Health, to mention only a few, are very much in keeping with our present-day outlook.

The information given in each chapter covers every aspect of the subject and does so in such a fashion that knowledge can be easily assimilated, even by newcomers to the study of health. Care is taken to define medical terms in straightforward language, for instance " Psychotic : a medical term for a condition commonly called insanity "—simple but effective. There are many illustrations with minimum labellings, and graphs set out in such a manner that they are self-explanatory. The only exception to the lucid graphs occurs in the chapter on heredity. The diagrams to illustrate the Mendelian Law are a little confusing, and a further minor scientific inaccuracy is that the number of chromosomes in a cell is stated to be 48, whereas we now know from electro-microscopic studies that the number is only 46.

Group participation is a now common method of teaching. At the end of every chapter there is a list of questions entitled " Discussion Suggestions ". These questions can easily be answered by reading the chapter and will provide a good basic knowledge. For instance the chapter on Stimulants and Narcotics has in its discussion suggestions " Discuss the relation of smoking (a) to longevity, (b) to cancer, (c) to cardiovascular diseases ". If a health educator had to talk on these subjects a lot of time would be spent looking up references and visiting the necessary scientific libraries, but here the information is given in a concise and lucid form. Anyone who, having read the chapters, feels the need for further reading will find a list of references given.

This book can be recommended on five points : choice of subject matter ; presentation ; the wide scope of knowledge it contains ; discussion questions and references given at the end of each chapter ; the graphs and diagrams. It will not only be intrinsically helpful to health educators but will form a ready basis for many subjects on which they are asked to talk or lecture.

G. B. TAYLOR.

PARENT EDUCATION : AN INTERNATIONAL SURVEY, by H. H. Stern. (University of Hull and the Unesco Institute for Education, Hamburg. 1960. Pp. 163. Price 6s. 6d.)

Do parents need education ? Could this fascinating question fail to arouse discussion in professional or lay, old or young audiences ? Dr. Stern's book is the result of the interpretation and evaluation of current developments in parent education in thirty-five countries. It is presented jointly by the University of Hull and the Unesco Institute for Education, Hamburg. The material included by the author makes lucid and easy reading and can be wholly recommended to all teachers, parents, medical and social workers. The four parts include the case for parent education, world developments, emphasis on conditions and trends in the U.S.A., France, Germany and the United Kingdom, and further problems and difficulties.

The section concerning the United Kingdom is of especial interest, and is a first class documentation of what has been and is being done. Considerable emphasis is placed upon the role of the Maternity and Child Welfare services, education for family life, preparation for marriage, and the roles of discussion and the mass media. If we set this section beside those of the other major countries we get a better insight into our own problems, and find many pointers for discussion. It will be invaluable to all concerned with the education of individuals and groups. In answer to the leading question one might quote : " Parents are faced with changes in society for which the memories of their own childhood offer no guide or

precedent ; without a deliberate educational effort they do not understand what is happening and how to respond to the new situation ".

One must hope that this excellent book will find its way onto all teaching reference shelves and local government libraries to be read and enjoyed.

D. LYNTON PORTER.

MARGARET MCMILLAN: THE CHILDREN'S CHAMPION, by G. A. N. Lowndes. (Museum Press. 1960. Pp. 110. Price 15s.)

This is a fascinating book about an important pioneer for the welfare of children.

The author weaves together, in a pleasing way, illuminating comments by many renowned contributors who knew Margaret McMillan personally. A useful summary of her life is given in the Foreword.

Good photographs emphasise some of the great differences in past and present treatment of young children for which she was so largely responsible.

The book shows how this dynamic and warm personality strove arduously to establish for slum children conditions of beauty and happiness, nourishing food, movement in the fresh air, cleanliness and sleep. Even within a short period of time she was rewarded by seeing their vastly improved health and by knowing that her pioneer work would be carried on by those medical and educational forces that she had roused into action.

This book is interesting and well worth reading by student teachers and by others who should be conversant with the roots of our present welfare services for children of all ages.

EILEEN W. PARKER.

FIRST AID IN THE FACTORY, by Lord Taylor. (A Medical World Handbook, published by Longmans. 1960. Pp. 140. Price 9s. 6d.).

This is a new approach to first aid which involves an important aspect of preventive medicine.

Much sickness absence and some permanent harm follow apparently trivial injuries. Teaching of first aid in standard manuals has been largely aimed to meet the needs of ambulance workers and others who deal with major casualties comparatively rare in modern industry. The factory first aider must be prepared to cope with them at least until the arrival of the experienced ambulance worker, but more of his time is likely to be taken up with minor traumata and ailments, many of which may not be referred to a doctor or nurse any more than small home accidents are. Except in large compact factories, it is not practicable to do so ; for good or ill the industrial first aider does his best.

Recognising this, the book aims at appropriate education of the first aider. Emphasis is laid on simple aseptic technique, with warning to refer all but minor cases. Major first aid is included essentially from a practical viewpoint with less reference to anatomy and physiology. It is designed for both first aiders and teachers, and has exceptionally clear illustrations and a full index.

S. F. M. CRESSALL.

NATURE HITS BACK, by Macpherson Lawrie. (Cedar Book No. 67. The World's Work (1913) Ltd., Kingswood Surrey. 1960. Pp. 190. Price 3s. 6d.)

This book was originally published in 1936, and it has been revised by the author for the present paper-back edition. Dr. Lawrie has now retired from psychiatric consulting practice, but the original text was obviously composed in the light of his experience, and much of it is as true today as 25 years ago. The author's general outlook is commendably preventive and he points out early in the book that the high social values placed upon hospitals and the voluntary and statutory services which support them, themselves tend to encourage the view that illness and its treatment are necessary accompaniments of civilised living. As the title states, the author feels that the environment which man has created for himself has imposed unnecessary limitations or stresses. The chapter on " Congestion and Fatigue " is admirable and emphasises the importance of the removal of inhibitions which prevent people from fully participating in life, and the need to effect good personal relationships. He describes very graphically the progressive deterioration of resilience to emotional stress, with

increasing over-sensitivity and lack of personal confidence.

In his other chapters Dr. Lawrie's views are distinctly controversial. He places great importance upon diet and repeats the familiar story of the impoverishment of modern foodstuffs and the evils of the consumption of refined carbohydrates.

This section is polemical and seems out of place—the switch of interest demanded from the reader detracts from the main theme. The chapter on sex is characterised by highly personal views of the author. He disapproves of contraceptives on the grounds that they are inhibiting in a relationship which should be spontaneous.

On reading this book it is interesting to speculate how effective it has been in the advice given to its readers. It is 24 years since it first appeared. How many people read it in the first three editions, and how far were they helped in handling life's situations? If after 24 years there is still need for the message to be repeated, should something be done to ensure a wider readership and to seize the opportunity of holding discussions with as many readers as possible?

A. J. DALZELL-WARD.

THE JUNIOR TRUE BOOK OF YOUR BODY AND YOU, by Alice Hinshaw, illustrated by Frances Eckart. (Frederick Muller. 1960. Pp. 48. Price 8s. 6d.)

This delightful book does much to stimulate a child's sense of wonder. The irresistible personal approach is used to present a well-graded sequence of factual information introducing the various components of anatomy, leading eventually to that prerogative of a human being—the divine spark.

The style is vivid and in no way pedantic. The type is print-script and the vocabulary is suitable for a reading age of seven years, but the content is so fascinating that older children also will read it with enjoyment. Throughout the book the arrangement maintains an admirable balance of text space and picture. Colour is introduced but is not aggressive and the illustrations constitute a most attractive and useful visual aid — charming, sometimes amusing, but always conveying information through symbols within the scope of a child's experience.

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FILMSTRIPS

CHRONIC BRONCHITIS—A MEDICO-SOCIAL PROBLEM, produced by Diana Wyllie Ltd., with the co-operation of Pfizer Ltd. Lecture notes by Dr. J. L. Burn. Colour. 30 frames. Price £2.

The idea behind this interesting filmstrip is that chronic bronchitis concerns the whole community and it is intended for use in schools and social organisations as well as for health and social workers.

The subject is divided into three sections: "Incidence and causes"; "Treatment and management"; and "Public health and the prevention of chronic bronchitis". There is an explanation of clinical and pathological features and how these are associated with social conditions. A complete team of family doctor, health visitor, home nurse, home help and the hospital services is seen to be concerned in treatment. As postural drainage is shown, one might also add members of the family to the team. In the third section it is significant that immunisation against whooping cough is included as a preventive measure. There can be no doubt that early lung damage—from any cause, apart from whooping cough—is a precursor of chronic chest disease in later life. Advice might also be given to parents that they should treat the common cold seriously and that medical advice should be sought in every case in which a cough persists.

The material is attractively presented in colour and, apart from a few well designed charts, consists of scenes in the house, street and industry. Smoking is revealed as a factor in chronic bronchitis, and the undesirability of children starting the habit is mentioned. The strip is packed with factual information and statistics. The teaching notes, written by Dr. J. L. Burn, are excellent and there is a bibliography in addition.

This technique for the presentation of social medicine could well be applied to other topics.

A. J. DALZELL-WARD.

BASIS FOR BEAUTY, produced by Camera Talks in co-operation with Vitamins Ltd. Colour. 29 frames. Brief notes. Price £2 12 6d.

It is suggested that a combination of charm, vitality and good looks makes a girl the centre of attraction wherever she goes. As usual with Camera Talks productions, the pictures are attractive and well balanced, and there is skilful use of light and shade. The models are exceptionally well groomed and have the photogenicity that only careful selection can produce.

The commentary on frames 8 and 9 states that "the food on your table has an even bigger part to play in making you a beauty than the bottles and jars on your dressing table". In frame 8 a large box of Bemax occupies a prominent position. The correct priority is given to the importance of proteins as the first essential of a balanced diet. And to avoid obesity it is suggested that less of the carbohydrates (pictured as chipped potatoes, bread, and cakes) should be taken. There is a warning against any reduction of fluid intake in a slimming diet. The commentary on frame 19 states that the "B group of vitamins is one of the most important vitamins to remember in your quest for good looks". Frame 24 correctly indicates that a light snack should consist of milk, cheese, raw tomato and bread, rather than tea and buns which provide mainly carbohydrate. The commentary on frame 29 may also be quoted: "a good diet . . . will make you the sort of woman you want to be . . . the sort of person all men want to meet".

The filmstrip is frankly commercial, and the title could well be "Bemax for Beauty". No mention is made of the importance of sleep, rest and relaxation as ingredients for "a lively and attractive companion whose charm and good looks last long, long past her teens". No mention is made of the need for exercise. The obvious bias detracts very greatly from the effectiveness of this filmstrip as an educational aid. A balanced diet, with an adequate daily proportion of animal proteins, will supply all the human requirements of the vitamin B complex. No supplementation is necessary. Many of the statements in the commentary would not stand up to critical examination.

D. J. GORDON-SMITH.

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Full details from the Medical Director, Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.

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